This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

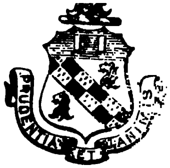
+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

LANE MEDICAL LIBRARY STANFORD
2 45 0061 2739

LANE
MEDICAL LIBRARY
SEAL OF THE LELAND STANFORD JUNIOR UNIVERSITY
SEMPER VIRENS
1885
LEVI COOPER LANE FUND


PRUDENTIA ET ANIMIS

A

GUIDE TO THERAPEUTICS

AND

MATERIA MEDICA.

BY

ROBERT FARQUHARSON, M.D. EDIN.,
F.R.C.P. LOND.,
LATE LECTURER ON MATERIA MEDICA AT ST. MARY'S HOSPITAL
MEDICAL SCHOOL, ETC.

THIRD AMERICAN EDITION, REVISED BY THE AUTHOR.

ENLARGED AND ADAPTED TO THE U. S. PHARMACOPŒIA

BY

FRANK WOODBURY, M.D.,
PHYSICIAN TO THE GERMAN HOSPITAL, PHILADELPHIA.

QUAE PROSUNT OMNIBUS
LANE MEDICAL LIBRARY
2127
SAN FRANCISCO

PHILADELPHIA:
HENRY C. LEA'S SON & CO.
1882.

Entered according to the Act of Congress, in the year 1882, by
HENRY C. LEA'S SON & CO.,
in the Office of the Librarian of Congress. All rights reserved.

COLLINS, PRINTER.

'238
882

EDITOR'S PREFACE.

THERE is no more encouraging evidence of progress in medical science than the growing desire of the profession for exact information concerning the action of remedial agents. A tendency towards empiricism, springing from too exclusive a reliance upon clinical observation, finds its natural correction only in increased familiarity with ascertained facts respecting the influence of drugs upon the human system in health and disease; and no argument is needed to show that if therapeutics is ever to attain the precision of a science it must be based upon the fullest attainable knowledge of this kind; indeed, it may truly be said that therapeutics, in so far as it is a science, owes its position to bio-chemistry, and a knowledge of the physiological action of drugs.

The present volume is an intelligent effort to present, in moderate compass, such well-digested facts concerning the physiological and therapeutical action of remedies as are reasonably established up to the present time. By a convenient arrangement the corresponding effects of each article in health and disease are presented in parallel columns, not only rendering reference easier, but also impressing the facts more strongly upon the mind of the reader.

In the first American edition very considerable additions were found desirable to adapt it thoroughly to the wants of the American student—additions that seemed to warrant the insertion of the words

"Materia Medica" in the title-page. Without altering the peculiar features of the original, some changes were then made in the arrangement, and very copious notes introduced, embodying the latest revision of the U. S. Pharmacopœia, together with the antidotes to the more prominent poisons, and such of the newer remedial agents as seemed necessary to the completeness of the work. All matter thus added will be found distinguished from the text by brackets [ ].

The acceptance of these modifications by the author, and his very conscientious revision of the whole, have rendered unnecessary any considerable additions by the editor in the present edition. He has, however, thought it advisable to introduce the Metric System in addition to the old form of writing prescriptions, in deference to the demands of scientific progress and uniformity of observation. A ready reference table of Poisons has been placed at the end of the book, and in the text itself the tests of the prominent poisons have been inserted. It is hoped that the very careful revision and additions that have been made to the work (which have increased its size nearly one-third) have proportionately enhanced its value to the student.

In a compendious volume like the present, reference to many authorities would be out of the question, but the editor must especially acknowledge his indebtedness to the excellent National Dispensatory of Drs. Stillé and Maisch, Dr. Wood's Therapeutics and Materia Medica, Dr. Griffith's Formulary, and especially to the clinical teachings of Professors Da Costa and Bartholow.

PHILADELPHIA, Oct. 15, 1882.

AUTHOR'S PREFACE TO THIRD AMERICAN EDITION.

A THIRD edition of my little book having been called for with flattering promptitude, I have great pleasure, as on a former occasion, in co-operating with Dr. Frank Woodbury, and hope that our united exertions will be found to have kept this volume fairly up to the progress of all. At the same time, I may note that the past two years have been by no means fertile, either in the purely scientific gains from experimental research, or in the more directly practical form of knowledge derived from clinical experience and observation. An unusually small number of new drugs have been introduced, and but scanty addition made to our understanding of the properties of those which we already possess, so that in my revision of the following pages, comparatively little alteration has been required. Such a lull is by no means unnatural after the great beneficial activity recently shown in the field of Therapeutics; and as scientific exactness of method gradually brings the other branches of the healing art nearer towards perfection, we may be sure that the actual drug treatment of disease will assume the precision toward which it is now advancing with slow but sure steps.

I cannot help thinking that, important although the services are, which have been rendered by the purely experimental method, what we now require more urgently, are numerous and carefully conducted observations on a very wide scale of the action of remedial agents on the human subject in health and disease. Any one who runs through our medical periodicals cannot fail to see the great danger of generalizing on insufficient data, or rushing into print with conclusions derived from a very small number of cases, and the contradictory nature of the evidence thus furnished, is most perplexing to the minds of compilers desirous of furnishing to their readers an accurate summary of all real and solid progress.

The attempt to harmonize individual observation by means of committees, and the circulation broadcast of elaborate schedules, to be no less elaborately filled up, has seldom proved successful, as the transactions of many of our learned societies conclusively show, and so far as the medical profession, at least, is concerned, the special circumstances under which work is carried on make it quite evident, that it is far better to leave each man to carry out that work for himself. The rigid rules for investigation now so carefully laid down, and the necessity for the use of modern instruments of precision will always insure that any observations conceived in a scientific spirit will also be carried out with that accuracy which can alone inspire confidence, and we would enlist not only hospital physicians, but also those who are enabled to work the wide and most valuable field of family practice, in the cause of careful Therapeutic investigation.

In conclusion, I may say that it was with some hesitation I accepted Mr. Lea's kind offer, to become responsible for another introduction of my "guide" to the American public, as my retirement from active professional work may seem to deprive my labors of any slight authority they may ever have seemed to possess. But I could not resist the temptation of telling my friends and readers on the other side of the Atlantic once more how sincerely I thank them for their cordial appreciation of what little I have done for the furtherance of a cause which we all have very near at heart, and which is intimately bound up with almost every phase of development of scientific medicine.

23 BROOK STREET, GROSVENOR SQUARE, LONDON,
April, 1882.

PREFACE

TO

FIRST EDITION.

In these days of profuse publication, a preface coming from any one who ventures to write a textbook must assume, in great measure, an apologetic tone. Elaborate and comprehensive works on Therapeutics now crowd our shelves, and the question may not unnaturally arise, What excuse can be given for adding another item to the rapidly increasing list? In reply to this I can only express a hope that room may be found for a smaller handbook than those more elaborate treatises which reflect so faithfully the progress of modern science, and that my little bark may float peacefully by the side of more richly laden vessels without being entirely submerged by their waves. I cannot, of course, expect either to supersede or to rival the classical manuals of Ringer, Wood, and others, and all I aim at is to present the subject in briefer compass, in perhaps more systematic form, and unencumbered by any botanical or pharmaceutical detail.

Space has not enabled me to acknowledge the sources from which I have been enabled to compile the following pages; and I can only express in general terms my grateful sense of the labors of many able and industrious workers in the field of Therapeutics. I have freely drawn much valuable material from the systematic works of Stillé, Neligan, Garrod, Ringer, Wood, Bartholow, Phillips, Thorowgood, Nothnagel, Royle, and Christison; and I have also derived important instruction from the writings of Brunton, Handfield Jones, Fraser, Fothergill, John Harley, Anstie, Broadbent, Liebreich, and many others who have contributed important aid to the progress of our subject in later years.

For many of my prescriptions I am more especially indebted to Bartholow, and to the very handy little "Lessons on Prescribing" by Dr. Hansell Griffiths.

23 Brook Street, Grosvenor Square, W.
April, 1877.

CONTENTS.

INTRODUCTION . . . 25
THE ROUTES BY WHICH MEDICINES ENTER THE SYSTEM . 26
External Mode of Application 26
(*a*) Epidermic method . 26
(*b*) Endermic " . 27
(*c*) Hypodermic " . 27
(*d*) Intravenous injection 28
Internal Administration . 28
(*a*) By inhalation . . 28
(*b*) By enemata . . 28
(*c*) By the mouth . . 30
GENERAL RULES FOR PRESCRIBING . . . 30
Preliminary considerations 30
Combination of Drugs . 32
Form of Administration . 34
Proper time for Exhibition 34
Dosage 36
Interval between Doses . 38
Individual Peculiarities . 38
Idiosyncrasy: Habit . 38
Constitutional or Toxic Effect from Small Doses 41
Chemical and Physiological Incompatibilities . 42
Prescribing for Children . 45
Prescription-writing . 48
Weights and Measures . 48
Observations upon Doses . 49
General Rule for Doses · 50
GENERAL PLAN OF ARRANGEMENT 51
THE METRIC SYSTEM IN MEDICINE 54

SECTION I

REMARKS ON CERTAIN CLASSES OF REMEDIES.

ACIDS 55
ANÆSTHETICS . . . 58
ANTHELMINTICS . . . 59
ANTIDOTES 61
ANTIPYRETICS AND REFRIGERANTS 63
ANTISEPTIC AND DISINFECTANTS 66
ASTRINGENTS AND CAUSTICS 68
COUNTER-IRRITANTS . . 69
DIAPHORETICS . . . 70
DIURETICS 71
EMETICS 73
EMMENAGOGUES AND ECBOLICS 75
EXPECTORANTS . . . 76
NARCOTICS AND ANODYNES . 78
PURGATIVES . . . 80
STIMULANTS AND SEDATIVES . 84
TONICS 86
SUMMARY OF THE ACTION OF THERAPEUTIC AGENTS . 90
CLINICO-PHYSIOLOGICAL CLASSIFICATION OF DRUGS . 91

SECTION II.

REMEDIES COMPRISED IN THE PRIMARY LIST OF THE UNITED STATES PHARMACOPŒIA AND THEIR PREPARATIONS.

Those preparations marked * are not officinal.

- ABSINTHIUM . . . 93
- ACACIA 93
  - Syrupus Acaciæ . . 93
  - Mucilago Acaciæ . . 93
- ACETUM 94
  - Acetum Destillatum . . 94
- ACIDUM ACETICUM . . 94
  - Acidum Aceticum Dilutum 94
- **Aceta** 96
- ACIDUM ARSENIOSUM . . 96
- ACIDUM CARBOLICUM IMPUR. 96
- ACIDUM CARBOLICUM . . 96
  - Glyceritum Acidi Carbolici 96
  - Unguent. Acidi Carbolici 96
  - Supposit. Acidi Carbolici 96
  - Aqua Acidi Carbolici . 96
- ACIDUM CHROMICUM . . 100
- ACIDUM CITRICUM . . 101
  - Syrupus Acidi Citrici . 101
- ACID. GALLICUM (see GALLA).
- ACID. HYDROCYANICUM DIL. 102
  - Argenti Cyanidum . . 102
  - Hydrargyri Cyanidum . 102
  - Ferri Ferrocyanidum . 102
  - Potassii Cyanidum . . 102
  - Potassii Ferrocyanidum . 102
- ACIDUM LACTICUM . . 107
  - Ferri Lactas . . . 107
- ACIDUM MURIATICUM . . 107
  - Acid. Muriat. Dilut. . 107
- ACIDUM NITRICUM . . 109
  - Acidum Nitricum Dilut. . 109
- ACIDUM NITRO-MURIATICUM . 110
  - Acid. Nitro-Muriat. Dilut. 110
- ACIDUM OXALICUM . . 111
  - Ferri Oxalas . . . 111
- ACID. PHOSPHORIC. GLACIALE 112
  - Acid. Phosphor. Dilut. . 112
- ACIDUM SULPHURICUM . . 112
  - Acid. Sulphuric. Aromat. 112
  - Acid. Sulphuric. Dilut. . 112
- ACIDUM SULPHUROSUM . . 115
- ACIDUM TANNICUM . . 115
  - Unguent. Acidi Tannici . 115
  - Glyceritum Acidi Tannici 115
  - Suppositoria Acidi Tannici 116
  - Trochisci Acidi Tannici . 116
- ACIDUM TARTARICUM . . 116
  - Ferri et Ammonii Tartras 116
  - Pulveres Effervescentes . 116
  - Pulv. Efferv. Aperientes . 116
- ACIDUM VALERIANICUM . 117
  - Ammonii Valerianas . 117
  - Quiniæ Valerianas . . 117
  - Zinci Valerianas . . 117
  - Morphiæ Valerianas* . 117
- **Acida** 117
- ACONITUM 118
  - Aconiti Folia . . . 118
  - Aconita Radix . . . 118
  - Aconitia 118
  - Extractum Aconiti . . 118
  - Emplastrum Aconiti . . 118
  - Linimentum Aconiti . . 118
  - Tinctura Aconiti Radicis . 118
- ADEPS 123
  - Unguentum . . . 123
  - Ceratum 123
- ÆTHER 124
  - Æther Fortior . . . 124
  - Spiritus Ætheris Comp. . 124
- **Ætherea** 127
- ALCOHOL 127
  - Alcohol Dilutum . . 127
  - Alcohol Fortius . . 127
  - Vinum Xericum . . 127
  - Vinum Portense . . 127
  - Spiritus Vini Gallici . 127
  - Spiritus Frumenti . . 127
  - Spiritus Myrciæ . . 127
  - Spiritus Genevæ . . 127
  - Spiritus Ætheris Comp. . 135
  - Spiritus Ætheris Nitrosi . 135
- ALCOHOL AMYLICUM . . 136
  - Ammonii Valerianas . 136
  - Quiniæ Valerianas . . 136
- ALLIUM 136
  - Syrupus Allii . . . 136

ALOE 137
Aloe Barbadensis . . 137
Aloe Capensis . . . 137
Aloe Socotrina . . 137
Aloe Purificata . . 137
Pilulæ Aloes . . . 137
Pil. Aloes et Assafœtidæ . 137
Pilulæ Aloes et Mastiches 137
Pilulæ Aloes et Myrrhæ . 137
Pilulæ Rhei Compositæ . 137
Pulvis Aloes et Canellæ . 137
Tinctura Aloes . . 137
Tinctura Aloes et Myrrhæ 137
Tinct. Benzoini Composita 137
Vinum Aloes . . . 138
Suppositoria Aloes . . 138
ALTHÆA 139
ALUMEN 139
Alumen Exsiccatum . . 139
ALUMINII ET POTASS. SULPHAS 141
ALUMINII SULPHAS . . 141
AMMONIACUM 141
Mistura Ammoniaci . . 141
Pilulæ Scillæ Compositæ . 141
Emplastrum Ammoniaci . 141
Emp. Am. cum Hydrarg. . 141
AMMONIA 141
Aqua Ammoniæ Fortior . 141
Aqua Ammoniæ . . 142
Linimentum Ammoniæ . 142
Liquor Ammonii Acetatis 142
Spiritus Ammoniæ . . 142
Spirit. Ammon. Aromat. . 142
Tinct. Guaiaci Ammoniata 142
Tinct. Valerianæ Ammon. 142
Alumen 142
Ammonii Benzoas . . 142
Ammonii Bromidum . . 142
Ammonii Carbonas . . 142
Ammonii Chloridum . 142
Ammon. Chlor. Purificat. . 142
Ammonii Iodidum . . 142
Ammonii Nitras . . 142
Ammonii Sulphas . . 142
Ammonii Valerianas . 142
Cuprum Ammoniatum . 142
Ferri et Ammonii Citras . 142
Ferri et Ammonii Sulphas 142
Ferri et Ammonii Tartras 142
Hydrarg. Ammoniatum . 142
AMYGDALA 147
Amygdala Amara . . 147
Amygdala Dulcis . . 147
Mistura Amygdalæ . . 147
Oleum Amygdalæ Amaræ . 147
Ol. Amygdalæ Expressum 147
Aqua Amygdalæ Amaræ . 147
Syrupus Amygdalæ . . 148
Unguentum Aquæ Rosæ . 148
AMYLUM 148
ANGUSTURA 148
ANISUM 149
Aqua Anisi . . . 149
Oleum Anisi . . . 149
Spiritus Anisi . . . 149
ANTHEMIS 149
Infusum Anthemidis . 149
Oleum Anthemidis . . 149
ANTIMONIUM . . . 149
Antimonii Sulphuretum . 149
Antimonii Oxidum . . 149
Antimonii et Pot. Tartras 149
Antimonium Sulphurat. . 150
Antimonii Oxysulphuret. . 150
Pil. Antimonii Compositæ 150
Vinum Antimonii . . 150
Emplastrum Antimonii . 150
Unguentum Antimonii . 150
Syr. Scillæ Compositus . 150
AQUA 155
Aqua Destillata . . 155
Aquæ 160
ARGENTUM 160
Argenti Cyanidum . . 160
Argenti Nitras . . 160
Argenti Nitras Fusa . 161
Argenti Oxidum . . 161
ARNICA 162
Extractum Arnicæ . . 162
Emplastrum Arnicæ . 162
Tinctura Arnicæ . . 162
ARSENICUM 164
Acidum Arseniosum . 164
Arsenici Iodidum . . 164
Liq. Arsen. et Hyd. Iod. . 164
Liquor Arsenici Chloridi . 164
Liquor Potassii Arsenitis . 164
Sodii Arsenias . . 164
Liquor Sodii Arseniatis . 164
ASSAFŒTIDA . . . 171
Mistura Assafœtidæ . 171
Tinctura Assafœtidæ . 171
Pilulæ Assafœtidæ . . 171
Pil. Aloes et Assafœtidæ . 171

  Suppositoria Assafœtidæ . 171
  Emplastrum Assafœtidæ . 171
  Pilulæ Galbani Compositæ 171
AURANTIUM . . . 172
  Aurantii Amari Cortex . 172
  Aurantii Dulcis Cortex . 172
  Aurantii Flores . . 172
  Aqua Aurantii Florum . 172
  Syrupus Aurantii Florum . 172
  Confect. Aurantii Corticis 172
  Syrupus Aurantii Corticis 172
  Tinctura Aurantii . . 172
  Infusum Gentianæ Comp. . 173
  Tinctura Gentianæ Comp. . 173
  Tinctura Cinchonæ Comp. 173
AVENÆ FARINA . . . 173
BALSAMUM PERUVIANUM . 173
BALSAMUM TOLUTANUM . 174
  Syrupus Tolutanus . . 174
  Tinctura Tolutana . . 174
  Tinctura Benzoinii Comp. . 174
BARII CARBONAS . . . 174
  Barii Chloridum . . 174
  Liquor Barii Chloridi . 174
BELLADONNA . . . 175
  Belladonnæ Folia . . 175
  Belladonnæ Radix . . 175
  Tinctura Belladonnæ . 175
  Extractum Belladonnæ . 175
  Ext. Belladonnæ Alcoholic 175
  Ext. Bellad. Radicis Fluid. 175
  Emplastrum Belladonnæ . 175
  Unguentum Belladonnæ . 175
  Suppositoria Belladonnæ . 175
  Atropia 175
  Atropiæ Sulphas . . 175
BENZOINUM 184
  Acidum Benzoicum . . 184
  Ammonii Benzoas . . 184
  Tinctura Benzoini . . 184
  Tinct. Benzoini Composita 184
  Unguentum Benzoini . 184
OLEUM BERGAMII . . 185
BISMUTHUM 185
  Bismuthi Subcarbonas . 185
  Bismuthi Subnitras . . 185
BROMINIUM 186
  Ammonii Bromidum . 186
  Potassii Bromidum . . 186
BUCHU 187
  Ext. Buchu Fluidum . 187
  Infusum Buchu . . 187
CADMIUM 188
  Cadmii Sulphas . . 188
CAFFEA 188
CAJUPUTI 189
CALCIUM 189
  Calcii Chloridum . . 189
  Calcii Hypophosphis . 189
  Calx 189
  Calx Chlorinata . . 189
  Calcis Hydras . . . 189
  Calcii Carbon. Præcipitata 189
  Calcii Phosph. Præcipitata 189
  Creta Præparata . . 189
  Hydrargyrum cum Cretâ . 190
  Trochisci Cretæ . . 190
  Mistura Cretæ . . . 190
  Testa Præparata . . 190
  Liquor Calcii Chloridi . 190
  Liquor Calcis . . . 190
  Linimentum Calcis . . 190
  Potassa cum Calce . . 190
CALUMBA 191
  Ext. Calumbæ Fluidum . 191
  Infusum Calumbæ . . 191
  Tinctura Calumbæ . . 191
CAMPHORA 192
  Oleum Camphoræ . . 192
  Aqua Camphoræ . . 193
  Linimentum Camphoræ . 193
  Linimentum Saponis . 193
  Mistura Chloroformi . 193
  Spiritus Camphoræ . . 193
  Tinctura Opii Camphorata 193
  Cerat. Plumbi Subacetatis 193
CANELLA 195
  Pulvis Aloes et Canellæ . 195
  Vinum Rhei . . . 195
CANNA 195
CANNABIS AMERICANA . . 195
  Ext. Cannabis Americanæ 195
CANNABIS INDICA . . 195
  Extract. Cannabis Indicæ. 195
  Tinctura Cannabis . . 196
CANTHARIS 197
  Tinctura Cantharidis . 197
  Ceratum Cantharidis . 197
  Ceratum Ext. Cantharidis 197
  Charta Cantharidis . . 197
  Collod. cum Cantharide . 197
  Linimentum Cantharidis . 197
  Emp. Picis cum Canth. . 197
  Unguentum Cantharadis . 197

CAPSICUM 201
  Infusum Capsici . . 201
  Oleo-resina Capsici . . 201
  Tinctura Capsici . . 201
CARBO 201
CARBO LIGNI 201
  Carbo Animalis Purificat. 201
CARDAMOMUM 203
  Ext. Colocynthidis Comp. . 203
  Pulvis Aromaticus . . 203
  Tinctura Cardamomi . 204
  Tinct. Cardamomi Comp. . 204
  Tinct. Gentianæ Comp. . 204
  Tinctura Rhei . . . 204
  Vinum Aloes . . . 204
CARUM 204
  Oleum Cari . . . 204
  Tinct. Cardamomi Comp. . 204
CARYOPHYLLUS 204
  Infusum Caryophylli . 204
  Oleum Caryophylli . . 204
CASCARILLA 205
  Infusum Cascarillæ . . 205
CASSIA FISTULA . . . 205
CASSIA MARILANDICA . . 205
CASTOREUM 205
  Tinctura Castorei . . 205
CATARIA 206
CATECHU 206
  Infusum Catechu Comp. . 206
  Tinctura Catechu . . 206
Cerata 206
CERA ALBA 207
CERA FLAVA 207
CERIUM 207
  Cerii Oxalas . . . 207
CETACEUM 207
  Ceratum Cetacei . . 207
CETRARIA 208
  Decoctum Cetrariæ . . 208
  Chartæ 208
CHENOPODIUM . . . 208
  Oleum Chenopodii . . 208
CHIMAPHILA 208
  Decoctum Chimaphilæ . 208
  Extract. Chima. Fluidum . 208
CHIRETTA 209
CHLORAL 209
  Croton-Chloral* . . 215
CHLORINUM 217
  Aqua Chlorini . . . 217
CHLOROFORMUM . . . 218
  Chloroformum Venale . 218
  Chloroform. Purificatum . 213
  Mistura Chloroformi . 218
  Spiritus Chloroformi . 218
  Linimentum Chloroformi . 218
CHONDRUS 226
CIMICIFUGA 226
  Extract. Cimicifugæ Flu. . 226
CINCHONA 226
  Cinchona Flava . . 226
  Cinchona Pallida . . 227
  Cinchona Rubra . . 227
  Cinchoniæ Sulphas . . 227
  Decoctum Cinchonæ Flavæ 227
  Extractum Cinchonæ . 227
  Extractum Cinchonæ Flu. 227
  Infusum Cinchonæ Flavæ 227
  Quiniæ Sulphas . . 227
  Pilulæ Quiniæ Sulphatis . 227
  Tinctura Cinchonæ . . 227
  Decoct. Cinchonæ Rubræ . 227
  Infusum Cinchonæ Rubræ 227
  Tinct. Cinchonæ Comp. . 227
CHINOLIN* 237
CINNAMOMUM 238
  Oleum Cinnamomi . . 238
  Tinctura Cinnamomi . 238
  Aquæ Cinnamomi . . 239
  Pulvis Aromaticus . . 239
  Confectio Aromatica . 239
  Spiritus Cinnamomi . . 239
COCCUS 239
COLCHICUM 239
  Colchici Radix . . 239
  Colchici Semen . . 239
  Extract. Colch. Aceticum . 239
  Ext. Colch. Radicis Fluid. 239
  Vinum Colchici Radicis . 239
  Ext. Colch. Seminis Fluid. 240
  Tinctura Colchici . . 240
  Vinum Colchici Seminis . 240
COLLODIUM 242
  Collodium cum Cantharide 242
  Collodium Flexile . . 242
COLOCYNTHIS 243
  Extractum Colocynthidis . 243
  Ext. Colocynthidis Comp. . 243
  Pilulæ Catharticæ Comp. . 243
Confectiones . . . 244
CONIUM 244
  Conii Folia . . . 244
  Conii Fructus . . . 244

Ext. Conii Fructus Fluid. 244
Extractum Conii . . 244
Ext. Conii Alcoholicum . 244
Succus Conii . . . 244
Tinctura Conii . . 244
COPAIBA 248
Oleum Copaibæ . . 248
Pilulæ Copaibæ . . 248
COPTIS 251
CORIANDRUM . . . 251
CORNUS FLORIDA . . . 252
Decoctum Cornûs Floridæ 252
Ext. Corn. Floridæ Fluid. 252
CREASOTUM 252
Aqua Creasoti . . . 252
Unguentum Creasoti . 252
CRETA 252
CROCUS 252
CUBEBA 253
Extractum Cubebæ Fluid. 253
Oleo-Resina Cubebæ . 253
Oleum Cubebæ . . 253
Tinctura Cubebæ . . 253
Trochisci Cubebæ . . 253
CUPRUM 253
Cupri Subacetas . . 253
Cupri Sulphas . . . 253
Cuprum 253
Cuprum Ammoniatum . 253
Decocta 256
DIGITALIS 256
Extractum Digitalis . . 256
Ext. Digitalis Fluidum . 256
Infusum Digitalis . . 256
Tinctura Digitalis . . 256
Digitalinum . . . 256
DULCAMARA . . . 263
Decoctum Dulcamaræ . 263
Extractum Dulcamaræ . 263
Ext. Dulcamaræ Fluidum 263
ELATERIUM 263
Elaterium · . . . 263
Elaterin* 263
Emplastra . . . 264
ERGOTA 264
Ext. Ergotæ Fluidum . 264
Vinum Ergotæ . . 264
Ergotine* . . . 264
ERIGERON 269
ERIGERON CANADENSE . 269
Ext. Eriger. Can. Fluid. . 269
Oleum Eriger. Canadensis 269
EUPATORIUM . . . 269
Infusum Eupatorii . . 269
Extracta 270
FERMENTUM . . . 270
FERRUM 271
Ferri Hypophosphis . 271
Ferri Sulphuretum . . 271
Ferri Chloridum . . 271
Liquor Ferri Chloridi . 271
Tinctura Ferri Chloridi . 271
Ferri Citras . . . 271
Liquor Ferri Citratis . 271
Ferri et Ammonii Citras . 271
Ferri et Ammonii Sulphas 271
Ferri et Ammonii Tartras 271
Ferri et Potassii Tartras . 271
Ferri et Quiniæ Citras . 271
Ferri et Strychniæ Citras 271
Ferri Ferrocyanidum . 271
Ferri Lactas . . . 271
Ferri Oxalas . . . 271
Ferri Oxidum Hydratum . 271
Ferri Phosphas . . 271
Ferri Pyrophosphas . 272
Ferri Subcarbonas . . 272
Emplastrum Ferri . . 272
Trochisci Fefri Subcarb. . 272
Mistura Ferri Composita . 272
Ferri Sulphas . . . 272
Ferri Sulphas Exsiccata . 272
Ferrum Redactum . . 272
Pilula Ferri Carbonatis . 272
Pilulæ Ferri Compositæ . 272
Pilulæ Ferri Iodidi . . 272
Syrupus Ferri Iodidi . 272
Liquor Ferri Nitratis . 272
Liquor Ferri Subsulphatis 272
Liquor Ferri Tersulphatis 272
Potassii Ferrocyanidum . 272
FICUS 277
FILIX MAS 277
Oleo-resina Filicis . . 277
FŒNICULUM 278
Oleum Fœniculi . . 278
Aqua Fœniculi . . 278
GALBANUM 279
Emp. Galbani Compos. . 279
Pilulæ Galbani Compositæ 279
GALLA 279
Acidum Gallicum . . 279
Glyceritum Acidi Gallici . 279
Tinctura Gallæ . . 279

Unguentum Gallæ . . . 279
Acidum Tannicum, . . . 279
Unguentum Acidi Tannici 279
Glyceritum Acidi Tannici 279
Suppositoria Acidi Tannici 279
Trochisci Acidi Tannici . 279
GAMBOGIA 281
GAULTHERIA . . . 283
Oleum Gaultheriæ . . 283
GELSEMIUM 283
Ext. Gelsemii Fluidum . 283
GENTIANA 285
Extractum Gentianæ . 285
Ext. Gentianæ Fluidum . 286
Infusum Gentianæ Comp. 286
Tinct. Gentianæ Comp. . 286
GERANIUM 286
Extractum Geranii Fluid. 286
GLYCERINA 286
Glycerita . . . 287
GLYCYRRHIZA . . . 288
Ext. Glycyrrhizæ Fluid. . 288
Ext. Glycyrrhizæ . . 288
Mistura Glycyrr. Comp. . 288
Troch. Glycyrr. et Opii. . 288
GOSSYPII RADICIS CORTEX . 288
Ext. Gossypii Rad. Fluid. 288
GOSSYPIUM 289
Pyroxylon . . . 289
Collodium . . . 289
GUAIACUM 289
Guaiaci Lignum . . 289
Guaiaci Resina . . 289
Tinctura Guaiaci . . 289
Tinct. Guaiaci Ammoniata 289
GUTTA-PERCHA . . . 290
Liquor Gutta-Perchæ . 290
HÆMATOXYLON . . . 290
Decoctum Hæmatoxyli . 290
Extractum Hæmatoxyli . 290
HEDEOMA 291
Oleum Hedeomæ . . 291
HELLEBORUS . . . 291
Extractum Hellebori . 291
Tinctura Hellebori . . 291
HORDEUM 291
Decoctum Hordei . . 291
HUMULUS 292
Lupulina 292
Ext. Lupulinæ Fluidum .. 292
Infusum Humuli . . 292
Tinctura Humuli . . 292
Oleo-Resina Lupulinæ . 292
Tinctura Lupulinæ . . 292
HYDRARGYRUM . . . 292
Empastrum Ammon. cum Hydrar. . . . 292
Emplastrum Hydrargyri . 292
Hydrargyrum cum Cretâ . 292
Pilulæ Hydrargyri . . 292
Unguentum Hydrargyri . 292
Hydrarg. Oxid. Rubrum . 292
Ung. Hydr. Oxidi Rubri . 292
Hydrarg. Oxidum Flav. . 292
Ung. Hydr. Oxidi Flavi . 292
Hydr. Sulph. Rubrum . 293
Hydr. Chloridum Mite . 293
Pil. Antimonii Comp. . 293
Pil. Catharticæ Comp. . 293
Hydr. Chlor. Corrosivum . 293
Hydrarg. Ammoniatum . 293
Ung. Hydr. Ammoniata . 293
Hydr. Iodidum Rubrum . 293
Ung. Hydr. Iodidi Rubri . 293
Liquor Arsenici et Hydrargyri Iodidi . . . 293
Hydrarg. Iodidum Viride . 293
Hydrargyri Cyanidum . 293
Liquor Hydrarg. Nitratis . 293
Ung. Hydrarg. Nitratis . 293
Hydrargyri Sulphas Flava 293
HYDRASTIS 304
Extract. Hydrastis Fluid. 304
HYOSCYAMUS . . . 304
Hyoscyami Folia . . 304
Hyoscyami Semen . . 304
Extractum Hyoscyami . 304
Ext. Hyoscy. Alcoholicum 304
Ext. Hyoscyami Fluidum 305
Tinctura Hyoscyami . 305
ICHTHYOCOLLA . . . 307
IGNATIA 307
Extractum Ignatiæ . . 307
Infusa 307
IODINIUM 308
Tinctura Iodinii . . 308
Tinctura Iodinii Composita 308
Liquor Iodinii Compositus 308
Unguentum Iodinii . . 308
Ung. Iodinii Compositum . 308
Liq. Arsen. et Hydrar. Iod. 308
Syrupus Ferri Iodidi . 308
Pilulæ Ferri Iodidi . . 308
IODOFORMUM . . . 310

- Ipecacuanha . . . 311
  - Ext. Ipecacuanhæ Fluid. . 311
  - Pulvis Ipecacuanhæ Comp. 311
  - Trochisci pecacuanhæ . 311
  - Troch Morph. et Ipecac. . 311
  - Syrupus Ipecacuanhæ . 311
  - Vinum Ipecacuanhæ . 311
- Jalapa 316
  - Extractum Jalapæ . . 316
  - Pulvis Jalapæ Compositus 316
  - Resina Jalapæ . . 316
  - Tinctura Jalapæ . . 316
- Juglans 317
  - Extractum Juglandis . 317
- Juniperus 317
  - Infusum Juniperi . . 317
  - Oleum Juniperi . . 317
  - Spiritus Juniperi Compos. 317
  - Spiritus Juniperi . . 317
- Kino 318
  - Tinctura Kino . . . 318
- Krameria 318
  - Extractum Krameriæ . 318
  - Ext. Krameriæ Fluidum . 318
  - Infusum Krameriæ . . 318
  - Syrupus Krameriæ . . 318
  - Tinctura Krameriæ . . 318
- Lactucarium . . 319
  - Syrupus Lactucarii . . 319
- Lavandula . . 319
  - Oleum Lavandulæ . . 319
  - Spiritus Lavandulæ . . 319
  - Spiritus Lavandulæ Comp. 319
- Leptandra 319
- Limones 320
  - Limonis Cortex . . 320
  - Limonis Succus . . 320
  - Oleum Limonis . . 320
  - Acidum Citricum . . 320
  - Spiritus Limonis . . 320
  - Mistura Potassii Citratis . 320
  - Syrupus Limonis . . 320
  - Spiritus Ammoniæ Arom. 320
  - Spiritus Acidii Citrici . 320
- **Linimenta** . . . 321
- Linum 321
  - Oleum Lini . . . 321
  - Lini Farina . . . 321
  - Infusum Lini Compositum 321
  - Ceratum Resinæ Compos. 321
  - Linimentum Calcis . . 321
- Lithium 323
  - Lithii Carbonas . . 323
  - Lithii Citras . . . 323
- Lobelia 324
  - Acetum Lobelia . . 324
  - Tinctura Lobeliæ . . 324
- **Liquores** 325
- Lycopodium . . . 326
- Magnesium . . . 326
  - Magnesii Carbonas . . 326
  - Magnesii Sulphas . . 326
  - Magnesia . . . 326
  - Trochisci Magnesiæ . . 326
  - Liquor Magnesiæ Citratis 326
- Manganesium . . 328
  - Manganesii Oxid. Nigrum 328
  - Manganesii Sulphas . 328
- Manna 328
- Maranta 328
- Marmor 329
- Marrubium . . . 329
- Mastiche . - . . 329
  - Pilulæ Aloes et Mastiches 329
- Matico 329
  - Extractum Matico Fluidum 329
- Matricaria . . . 329
- Mel 330
  - Mel Despumatum . . 330
- **Mellita** 330
- Mentha Piperita . . 330
- Mentha Viridis . . . 330
  - Aqua Menthæ Piperitæ . 330
  - Oleum Menthæ Piperitæ . 330
  - Spiritus Menthæ Piperitæ 330
  - Trochisci Menthæ Piperitæ 300
  - Aqua Menthæ Viridis . 330
  - Oleum Menthæ Viridis . 330
  - Spiritus Menthæ Viridis . 330
- Mezereum 331
  - Extractum Mezerei Fluid. 331
  - Unguentum Mezerei . 331
  - Decoct. Sarsaparillæ Comp. 331
  - Ext. Sarsap. Comp. Fluid. 331
- **Misturæ** 331
- Monarda 331
  - Oleum Monardæ . . 331
- Moschus 332
- **Mucilagines** . . . 332
- Myristica 332
  - Spiritus Myristicæ . . 332
  - Oleum Myristicæ . . 332
- Macis 332
- Myrrha 333
  - Tinctura Myrrhæ . . 333
  - Tinctura Aloes et Myrrhæ 333

- Pilulæ Aloes et Myrrhæ . 333

NECTANDRA 333

NUX VOMICA . . . 334
- Tinctura Nucis Vomica . 334
- Extractum Nucis Vomicæ 334
- Strychnia . . . 334
- Strychniæ Sulphas . . 334

Olea 338
- Oleo-resinæ . . . 339

OLEUM ÆTHEREUM . . 339

OLEUM MORRHUÆ . . 339

OLEUM OLIVÆ . . . 342

OLEUM RICINI . . . 343

OLEUM SUCCINI . . . 344
- Oleum Succini Rectificatum 344

OLEUM THEOBROMÆ . . 345

OLEUM THYMI . . . 345

OLEUM TIGLII . . . 345

OPIUM 347
- Acetum Opii . . . 347
- Confectio Opii . . . 347
- Extractum Opii . . 347
- Emplastrum Opii . . 347
- Suppositoria Opii . . 347
- Suppositoria Plumbi et Opii 347
- Pilulæ Opii . . . 347
- Pilula Saponis Composita 347
- Pulvis Ipecac. Compositus 347
- Tinctura Opii . . . 347
- Tinctura Opii Acetata . 347
- Tinctura Opii Camphorata 347
- Tinctura Opii Deodorata . 347
- Trochisci Glycyr. et Opii . 348
- Trochisci Morph. et Ipecac. 348
- Liquor Morphiæ Sulphatis 348
- Suppositoria Morphiæ . 348
- Vinum Opii . . . 348
- Morphia 348
- Morphiæ Acetas . . 348
- Morphiæ Murias . . 348
- Morphia Sulphas . . 348

ORIGANUM 358
- Oleum Origani . . 358

OS 358

OVUM 358

PAPAVER 358

PAREIRA 358
- Ext. Pareiræ Fluidum . 358
- Infusum Pareiræ . . 358

PEPO 359

PHOSPHORUS . . . 359

PHYSOSTIGMA . . . 364
- Eserine* 364
- Extractum Physostigmatis 364

Pilulæ 368

PIMENTA 368
- Oleum Pimentæ . . 368

PIPER 368
- Oleo-resina Piperis . . 368

PIX BURGUNDICA . . . 369
- Emp. Picis Burgundica . 369
- Emp. Picis Cantharide . 369

PIX CANADENSIS . . . 369
- Emp. Picis Canadensis . 369

PIX LIQUIDA . . . 369
- Glyceritum Picis Liquidæ 369
- Infusum Picis Liquidæ . 369
- Unguentum Picis Liquidæ 369

PLUMBUM 370
- Plumbi Oxidum . . 370
- Emplastrum Plumbi . 371
- Liquor Plumbi Subacetatis 371
- Liq. Plumbi Subacet. Dil. 371
- Ceratum Plumbi Subacet. 371
- Liq. Plumbi Subacetatis . 371
- Plumbi Acetas . . . 371
- Suppositoria Plumbi . 371
- Suppositoria Plumbi et Opii 371
- Plumbi Carbonas . . 371
- Ung. Plumbi Carbonatis . 371
- Plumbi Nitras . . . 371
- Plumbi Iodidum . . 371
- Unguentum Plumbi Iodidi 371

PODOPHYLLUM . . . 375
- Extractum Podophylli . 375
- Resina Podophylli . . 375

POTASSIUM 376
- Potassa 376
- Liquor Potassæ . . 376
- Potassa cum Calce . . 376
- Potassii Acetas . . 376
- Potassii Bitartras . . 377
- Antimonii et Potassi Tart. 377
- Ferri et Potassii Tart. . 377
- Potass. et Sodii Tartras . 377
- Potassii Tartras . . 377
- Pulvis Jalapæ Compositus 377
- Potassii Bromidum . . 377
- Potassii Carbonas Impura 377
- Potassii Carbonas . . 377
- Extractum Spigeliæ et Sennæ Fluidum . . 377
- Mist. Ferri Composita . 377
- Potassii Bicarbonas . . 377

Potassii Sulphuretum . 377
Potassii Carbonas Pura . 377
Liquor Magnesii Citratis . 377
Liquor Potassii Arsenitis . 377
Liquor Potassii Citratis . 377
Mistura Potassii Citratis . 377
Potassii Acetas . . 377
Potassii Chloras . . 377
Trochisci Potas. Chloratis 377
Potassii Citras . . 377
Liquor Potassii Citratis . 377
Potassii Cyanidum . . 377
Potassii Ferrocyanidum . 377
Potassii Hypophosphis . 377
Potassii Iodidum . . 377
Potassii Nitras . . 378
Potassii Permanganas . 378
Liquor Potassii Permang. 378
Potassii Sulphas . . 378
Pulvis Ipecacuanhæ Comp. 378
Potassii Sulphis . . 378
Potassii Sulphuretum . 378
Potassii et Sodii Tartras . 378
Potassii Tartras . . 378
Potassii Bichromas . . 383
Potassii Bromidum . . 384
Potassii Iodidum . . 388
PRUNUM 393
PRUNUS VIRGINIANA . . 393
Ext. Pruni. Virgin. Fluid. 393
Infusum Pruni Virginianæ 393
Syrupus Pruni Virginianæ 393
Pulveres 394
PUNICA GRANATUM . . 394
Granati Fructus Cortex . 394
Granati Radicis Cortex . 394
Pelletierine* . . . 394
QUASSIA 395
Extractum Quassiæ . . 395
Infusum Quassiæ . . 395
Tinctura Quassiæ . . 395
QUERCUS ALBA . . . 395
Decoctum Quercûs Albæ . 395
QUERCUS TINCTORIA . . 395
RESINA 396
Ceratum Resinæ . . 396
Ceratum Resinæ Comp. . 396
Emplastrum Resinæ . 396
Resinæ 396
RHEUM 396
Extractum Rhei . . 396
Extractum Rhei Fluidum . 396
Infusum Rhei . . . 396
Pilulæ Rhei . . . 396
Pilulæ Rhei Compositæ . 396
Pulvis Rhei Compositus . 396
Syrupus Rhei . . . 396
Syrupus Rhei Aromaticus 396
Tinctura Rhei . . . 397
Tinct. Rhei et Sennæ . 397
Vinum Rhei . . . 397
ROSA CENTIFOLIA . . 398
ROSA GALLICA . . . 398
Oleum Rosæ . . . 398
Aqua Rosæ . . . 398
Confectio Rosæ . . 398
Infusum Rosæ Comp. . 398
Mel Rosæ . . . 398
Syrupus Rosæ Gallicæ . 398
Unguentum Aquæ Rosæ . 399
ROSMARINUS . . . 399
Oleum Rosmarini . . 399
RUBUS 399
Extractum Rubi Fluidum 399
Syrupus Rubi . . . 399
RUTA 399
Oleum Ruta . . . 399
SABADILLA 400
Veratria 400
Unguentum Veratriæ . 400
SABINA 401
Ceratum Sabinæ . . 401
Extractum Sabinæ Fluid. 401
Oleum Sabinæ . . . 401
SACCHARUM . . . 402
Syrupus Fuscus . . 402
SACCHARUM LACTIS . . 402
SAGO 402
SALVIA 403
Infusum Salviæ . . 403
SAMBUCUS 403
SANGUINARIA . . . 403
Acetum Sanguinariæ . 403
Tinctura Sanguinariæ . 403
SANTALUM 404
SANTONICA 404
Santoninum . . . 404
Trochisci Santonini . . 404
SAPO 407
Ceratum Saponis . . 407
Emplastrum Saponis . 407
Linimentum Saponis . 407
Pilula Saponis Composita 407
SARSAPARILLA . . . 407

Decoct. Sarsaparillæ Comp. 407
Extr. Sarsaparillæ Fluid. 407
Ext. Sarsap. Comp. Fluid. 408
Syrupus Sarsap. Comp. . 408
SASSAFRAS 408
Oleum Sassafras . . 408
Sassafras Medulla . . 408
Mucilago Sassafras Medul. 408
SCAMMONIUM . . 409
Resina Scammonii . . 409
Ext. Colocynthidis Comp. 409
SCILLA 409
Acetum Scillæ . . . 409
Syrupus Scillæ . . 409
Pilulæ Scillæ Compositæ 409
Syrupus Scillæ Compositus 410
Tinctura Scillæ . . 410
Extractum Scillæ Fluidum 410
SCOPARIUS 410
SENEGA 412
Decoctum Senegæ . . 412
Extractum Senegæ . . 412
Extractum Senegæ Fluid. 412
Syrupus Senegæ . . 412
SENNA 413
Confectio Sennæ . . 413
Extractum Sennæ Fluidum 413
Infusum Sennæ . . 413
Tinctura Rhei et Sennæ . 413
SERPENTARIA . . . 414
Ext. Serpentariæ Fluidum 414
Infusum Serpentariæ . 414
Tinctura Serpentariæ . 414
SEVUM 414
SINAPIS ALBA . . . 414
SINAPIS NIGRA . . . 414
Charta Sinapis . . 414
SODIUM 416
Sodii Acetas . . . 416
Sodii Bicarbonas Venalis . 416
Sodii Boras . . . 416
Glyceritum Sodii Boratis . 416
Mel Sodii Boratis . . 416
Sodii Carbonas . . 416
Sodii Chloridum . . 416
Sodii Hypophosphis . . 417
Sodii Hyposulphis . . 417
Sodii Nitras . . . 417
Sodii Sulphas . . . 417
Sodii Sulphis . . . 417
Soda 417
Liquor Sodæ . . . 417
Sodii Arsenias . . . 417
Liquor Sodii Arseniatis . 417
Sodii Bicarbonas . . 417
Pulveres Effervescentes . 417
Pulveres Eff. Aperientes . 417
Trochisci Sodii Bicarb. . 417
Sodii Carbonas Exsiccata . 417
Sodii Phosphas . . 417
Liquor Sodæ Chlorinatæ . 417
Seidlitz Powder . . 418
Soda Mint . . . 419
SPIGELIA 419
Extract. Spigeliæ Fluidum 419
Extractum Spigeliæ et Sennæ Fluidum . . 419
Infusum Spigeliæ . . 419
Spiritus 420
SPIRITUS FRUMENTI . . 420
SPIRITUS MYRCIÆ . . 420
SPIRITUS VINI GALLICI . 420
STATICE 420
STILLINGIA 421
Extr. Stillingiæ Fluidum . 421
STRAMONIUM . . . 421
Stramonii Folia . . 421
Stramonii Semen . . 421
Extr. Stramonii Foliorum 421
Extr. Stramonii Seminis . 421
Tinctura Stramonii . . 421
Unguentum Stramonii . 421
STYRAX 422
Succi 422
SULPHUR 422
Sulphur Lotum . . 422
Sulphur Sublimatum . 422
Sulphur Precipitatum . 422
Sulphuris Iodidum . . 422
Unguentum Sulphuris . 422
Ung. Sulph. Iodidi . . 422
Sodii Hyposulphis . . 422
Sodii Sulphis . . . 422
Potassi Sulphis . . 422
Suppositoria . . . 424
Syrupi 425
TABACUM 425
Infusum Tabaci . . 425
Oleum Tabaci . . . 425
Unguentum Tabaci . . 425
Vinum Tabaci . . . 425
TAMARINDUS . . . 427
TAPIOCA 428
TARAXACUM . . . 428

Extractum Taraxaci . 428
Ext. Taraxaci Fluidum . 428
Infusum Taraxaci . . 428
Succus Taraxaci . . 428
TEREBINTHINA 428
TEREBINTHINA CANADENSIS . 428
Oleum Terebinthinæ . 429
Linimentum Terebinthinæ 429
TESTA 431
Testa Preparata . . 431
Tincturæ 432
TRAGACANTHA . . . 432
Mucilago Tragacanthæ . 432
Trochisci 433
ULMUS 433
Mucilago Ulmi . . 433
Unguenta . . . 433
UVA PASSA 434
UVA URSI 434
Decoctum Uvæ Ursi . 434
Ext. Uvæ Ursi Fluidum . 434
VALERIANA . . . 434
Extractum Valerianæ . 434
Ext. Valerianæ Fluidum . 434
Infusum Valerianæ . . 434
Oleum Valerianæ . . 434
Tinctura Valerianæ . . 434
Tinct. Valerianæ Ammon. 434
Acidum Valerianicum . 435
Ammonii Valerianas . 435
Quiniæ Valerianas . . 435
Zinci Valerianas . . 435
VANILLA 435
VERATRUM ALBUM . . 435
VERATRUM VIRIDE . . 436
Ext. Verat. Vir. Fluid. . 436
Tinctura Veratri Viridis . 436
Vina 437
ZINCUM 437
Zinci Oxidum . . . 437
Zinci Oxidum Venale . 437
Ung. Zinci Oxidi . . 437
Zinci Chloridum . . 438
Liquor Zinci Chloridi . 438
Zinci Acetas . . . 438
Zinci Carb. Præcipitata . 438
Cerat. Zinci Carbonatis . 438
Zinci Sulphas . . . 438
Zinci Valerianas . . 438
ZINGIBER 440
Ext. Zingiberis Fluidum . 440
Infusum Zingiberis . . 440
Oleo-resina Zingiberis . 440
Syrupus Zingiberis . . 440
Tinctura Zingiberis . . 440
Trochisci Zingiberis . . 440

SECTION III.

REMEDIES IN FREQUENT USE, BUT NOT INCLUDED IN THE PRIMARY LIST, U. S. P.

ACIDUM BORACICUM . . 441
ACIDUM SALICYLICUM . . 442
Sodii Salicylas . . . 442
Ammonii Salicylas . . 442
Cinchonidiæ Salicylas . 442
Chinolin Salicylas . . 442
AMYL NITRAS . . . 445
ARECA 449
AURUM 449
Auri Chloridum . . 449
Auri et Sodii Chloridum . 442
AZEDARACH . . . 450
BELÆ FRUCTUS . . . 450
BRAYERA 450
BROMIDE OF ETHYL . . 451
Ethidene Dichloride . . 451
CASCA BARK . . . 452
COCCULUS INDICUS . . 452
Picrotoxin . . . 452
CURARE 453
CURCUMA 455
DUBOISIA 455
ETHYLATE OF SODIUM . . 456
EUCALYPTUS GLOBULUS . 456
Oleum Eucalypti Foliorum 456
FARINA TRITICI . . . 456
FEL BOVINUM PURIFICATUM . 457
FUCHSINE 457
GOA POWDER . . . 457
INGLUVIN 458
JABORANDI 458
Pilocarpia . . . 458

Pilocarpia Murias . . 458
Elixir Jaborandis . . 458
Extractum Jaborandis Fluidum . . . 458
LIQUOR FERRI DIALYSATUS . 463
LARICIS CORTEX . . . 433
LAUROCERASI FOLIA . . 463
MORI SUCCUS . . . 464
MUSCARIN 464
NITROGLYCERINUM . . 464
NITROUS OXIDE GAS . . 454
PEPSINA 465
PETROLEUM . . . 466
PETROSELINUM . . . 467
QUEBRACHO . . . 468
Tinctura Quebracho . . 468
Tinctura Quebracho Composita 468
Vinum Quebracho . . 468
Elixir Quebracho . . 468
Extractum Quebracho Fluidum 468
RESORCIN 479
RHAMNI SUCCUS . . . 470
ROTTLERA 470
SALICIN 470
SUMBUL 471
THYMOL 471
TRIMETHYLAMINE . . . 471
Trimethylaminis Hydrochloras . . . 471
Propylamine . . . 471
LEECHES 472

APPENDIX.

POISONS 473
PROMPT TREATMENT OF POISONING 474
WEIGHTS AND MEASURES 481
Metric System 482
Relations of Weights of the U. S. P. to Metrical Weights . 483
Relations of Metrical Weights to Weights of the U. S. P. . 434
Relations of Measures of the U. S. P. to Metrical Measures . 485

THERAPEUTICS

AND

MATERIA MEDICA.

INTRODUCTION.

PREVIOUS to the study of the individual articles comprised within our national Pharmacopœia, the temptation is very strong to launch forth into a disquisition upon the general principles of therapeutics. So many interesting physiological considerations are involved in the actions and uses of drugs, and so many important illustrations might readily be drawn from the wide field of practical medicine, that little apology would really be needed for consuming some of our space in this way. Therapeutics has lately shown a systematic vitality which amply redeems its credit from the old-fashioned accusation of want of progress, for perhaps in no other department of our profession have more solid and satisfactory advances been made. But this very condition of vigor renders far more laborious and responsible the task of attempting to reduce to anything like precision the laws on which we are henceforth to prescribe our drugs, or to draw complete generalizations from the enormous mass of complicated material now at our disposal. Progress occasionally causes temporary confusion, by disturbing old beliefs and furnishing vast legions of sometimes unconfirmed and possibly ill-digested facts; and our present subject is by no means exempt from this almost inevitable tendency of true science.

A careful study of the many exhaustive works on therapeutics published within the last twenty years brings before us a strange medley of experimental evidence, confusing and contradictory it may be at times, but giving most encouraging proofs of the large amount of honest and persevering work now being devoted to the elucidation of this, the most important department of practical medicine. In the following pages I must necessarily assume a dogmatic attitude, and if the extreme precision with which my plan compels me to lay down the actions of drugs offends many whose faith is undeveloped or wavering, I can only excuse myself by pleading a conscientious desire to contribute something towards a more scientific scheme of arrangement. Although the time has not yet fully come for a complete explanation of all the therapeutical effects of medicinal agents by their proved physiological properties, I have ventured to take a step in this direction, and must only hope that my very defects and failures may be of use in helping others to develop these principles with greater success.

THE ROUTES BY WHICH MEDICINES ENTER THE CIRCULATION.

1. External Method of Application.—By this I do not mean the merely local action of irritants, caustics, or sedatives, but the attempts which we make to utilize the absorptive function of the cutaneous surface for therapeutic purposes. Now, the *skin* would, at first sight, seem to be a very convenient and tempting arrangement for passing our medicines directly into the blood; but unfortunately for this purpose, the vascular *cutis vera* is protected by the horny epidermis, which interposes a very considerable barrier to absorption. Much discussion has arisen on this point, and it now seems pretty certain that most drugs cannot permeate the epidermis readily, if at all, and hence this—(*a*) the *epidermic*, as it has been styled, or the method by *inunction*—is not of very wide application, save in the administration of mercury, which is thus readily admitted, and sometimes belladonna and digitalis. Fats and oils, and probably glycerine, increase our chances of procuring absorption in this way, and alcohol may act usefully by dissolving the sebaceous secretion of the skin.

Chloroform, which has been confidently vaunted as rapidly overcoming, by its great diffusive power, the opposition of the cuticle to absorption, hardly deserves its reputation, as the following experiment will show: after free immersion of my finger in a solution of atropia in chloroform (gr. j ad ʒj), not the slightest dryness of the throat or other physiological symptom was produced.

The cuticle, then, being our chief obstacle, it would seem an easy matter to overcome the resistance by its removal, and indeed this (*b*) the *endermic plan*, as it is called, has done some good service in therapeutics. Having procured a raw surface by blister, we may apply morphia, strychnia, or any drug we may wish to use, directly to the *cutis vera*, and thus obtain an undeniably active effect. But the process is slow and painful, it may be disfiguring, and cannot be very frequently repeated, and it has therefore been, justly, almost entirely superseded by (*c*) the *hypodermic* plan. This, being a rapid, economical, and most efficient proceeding, has come into very general use, the principal drawback being that the pleasant, soothing influence and relief from pain which morphia thus gives our patients has introduced a form of opium-habit, perhaps hardly less obstinately adhered to than the older-fashioned form. Unfortunately, however, not all drugs, nor even all alkaloids, are available for this method of administration, as two conditions are requisite for success—the fluid to be injected must be small in bulk, and it must be unirritating to the parts. Chloral has been thus used, but without much success; quinine, though efficient, is unhappily irritating;[1] ergotine produces hard, discolored, and painful lumps; mercury often causes abscess; and practically we are almost restricted to morphia, atropia, and strychnia, and of these the first named is by far the most available. We may refer to a description of the way in which the little operation is performed, under the subject OPIUM, remembering always that drugs act three or four times more powerfully when given by hypodermic injection than by the mouth.

Some authorities advise us to carry these injections boldly into the substance of the muscles, and it is said that strychnia thus acts well in some forms of paralysis, but of this I have no personal experience. [Deep injections are less liable to cause abscess than superficial ones.]

Then, again, injections may be made directly into the veins, and this would, theoretically, seem to be the best, because the most straightforward of all methods. We must not forget, however, that many drugs require to be acted

---

[[1] Several cases have been reported of death from tetanus following the hypodermic injection of quinia.]

on by some of the digestive juices before their due therapeutic powers are developed, and that the dangers of phlebitis, thrombosis, and of the admission of air into the veins, with all their perilous consequences, cannot be overlooked. (*d*) *Intra-venous injection* is therefore reserved for very desperate cases, and the most notable illustration is in the operation for transfusion, by which, after severe hemorrhage, lives have undoubtedly been saved. The intra-venous injection of chloral, so much praised abroad, has, so far as I know, been hardly practised at home. [It has not found general favor because it has proved suddenly fatal in several cases.]

2. Internal Administration.—1. Inhalation must stand first, on account of the great facility of its application, of its remarkable efficiency, and the great purity, so to speak, with which drugs thus enter the blood. Anæsthesia produced by chloroform, ether, or laughing-gas will occur, as the leading example, to every mind, and we know that the British Pharmacopœia has recently acknowledged the principle by the admission of five vapors—creasote, iodine, hydrocyanic acid, chlorine, and conium. But little use, however, has yet been made of this tempting channel for the administration of agents intended to act on the system generally, perhaps partly because it is a matter of doubt as to how far the delicate structures of the air-cells might be tolerant of the prolonged or repeated contact with possibly irritating substances. At present, inhalation has been almost confined to the treatment of lung diseases, and ipecacuanha, arsenic, stramonium, tannin, and carbolic acid have been thus employed; but there is no doubt that this plan is capable of much wider development, and that the Germans are far ahead of us in this respect. It is evident, however, that a barrier must always exist to the very extended adoption of aërial medication, by the irritant nature of many medicines, and the impossibility of reducing many of them to that minute subdivision which is essential for either ordinary inhalation or the formation of a readily absorbable spray.

2. Medicinal agents may be injected into any of the open cavities of the body. The rectum is much used in this way, and enemata, clysters, or injections as they are called, may be divided into three classes.

a. Purgative Enemata.—For efficient and easy evacuation of the large bowel, no method can compare to this, the principal points to remember being that the injection must be ample, from twelve ounces to a pint, must be passed up as far as possible, and must be retained as long as the patient is able. They may be composed of water alone, of salt and water, of gruel or oil, or of any of the purgative enemata contained in the Pharmacopœia (Br.), and their function is not only to act mechanically by washing out the contents of the lower bowel, but to stimulate its peristaltic movements, which they do very efficiently.

b. Those enemata which are intended for absorption, and which must, therefore, be small in quantity (℥j–ij), so as not to excite the expulsive movements of the gut. The principal of these is the enema opii, so highly prized on account of its restraining influence on the diarrhœa of typhoid and phthisis, and on account of the happy way in which it soothes pain, not only in the rectum, but, by nervous sympathy, also in the neighboring bladder and uterus. Astringents are also occasionally used in this way, whilst assafœtida, ipecacuanha, etc., find their special applications, which will be considered elsewhere, although we may here lay down the general rule, that drugs, with one exception (strychnia), act about half less powerfully by the rectum than by the stomach.

Another mode of utilizing the absorptive power of the bowel is by suppositories, or pastille-shaped masses of medicated oil of theobroma, wax, and lard, which are readily introduced within the sphincter ani, and where they readily melt at the temperature of the body.

c. Nutrient enemata are of great service in cases where swallowing is prevented by cancer or stricture of the œsophagus, or where we wish to give the stomach, irritated by the presence of chronic ulcer, a thorough rest. The great difficulty, of course, is that the rectum, although it absorbs readily, has no digestive function, so that we must either compose our enema of very simple materials, or else add pepsin and acid, or pancreatic fluid. Meat and pancreas enemata, formed of one pound of finely minced beef, free from fat or cellular tissue, with about three ounces of pancreas, kept a patient alive for nine months, and two to six ounces of freshly defibrinated ox-blood twice a day are said to have produced excellent effects in some cases where nourishment could not be taken by the mouth, the combination of a grain of chloral preventing premature decomposition.

3. Drugs are occasionally injected into the bladder, but its absorptive power, if it exist at all, is very limited. It is

usually only the mucous membrane which is locally attacked in this way by weak acids, alkalies, quinine, opium, and the like.

4. We now come to the most widely used, convenient, and generally available mode of using medicines, by introduction into the stomach. Swallowing a dose at stated intervals involves far less trouble and general annoyance, than the other plans we have just passed in review, and, after all, is of almost universal application in ordinary cases. Occasionally, where patients will not or cannot swallow, we require to pump food, or drugs, artificially into the stomach, but, as a general rule, there is no difficulty on that score. It only remains for us now to consider the drawbacks we have to surmount.

First. The patient is made fully aware of the too frequently nauseous taste of his medicine, and we must endeavor to conceal this by flavoring ingredients, by capsules, or other means.

Secondly. Our drugs may spoil the appetite, injure the digestion, lower the tone of the system, cause nausea and depression, and general discomfort, and this we may partly avoid by timing their administration at judicious intervals.

Thirdly. By coming in contact with various secretions, the remedy is much altered before it reaches the blood. The salivary, pancreatic, or biliary fluids, on the one hand, and the gastric juice on the other, must largely neutralize acid and alkaline remedies, whilst some drugs may be rendered partly inert by stomach digestion, or, like curare, may be eliminated too rapidly by the kidney to exert any poisonous influence when taken by the mouth. But we must also remember that these and other actions give us substantial therapeutic aid. The bile aids the absorption of our oily remedies, the gastric juice aids the solution and absorption of quinine and other drugs. Many purgatives only act effectually after previous solution in the alkali of the bile, etc.

GENERAL RULES FOR PRESCRIBING.

Preliminary Considerations.—It will be well, before proceeding further, that I should lay down some broad rules which may guide us in the construction of prescriptions; and it seems best to introduce this subject here, instead of placing it, according to more usual custom, at the end of the book, as it is to be our aim and object to devote much care and attention throughout to the best modes of ordering drugs. Much professional credit may be derived from a good prescription, and as much damage done to the practitioner who orders for his patients mixtures which are neither agreeable to the eye nor palatable to the taste. It is well worthy of the student's attention to consider the most pleasant, effectual, and convenient way of ordering the drugs which are required by the sick, and at first he will no doubt consider this a very difficult task. This will partly depend on the fact that he has had the subject of doses and therapeutical actions presented to him in such concentrated form that he will find some awkwardness in using practically the theoretical knowledge which he has laboriously obtained. The time at his teacher's disposal is so short that he has to run hurriedly from one drug to another, and bring into immediate relation remedies which differ so widely in their effects as to excite some not unnatural confusion in the minds of his hearers. It is therefore not an uncommon thing to hear students say that they do not think they will ever be able to remember the doses of the principal medi cines. Then we must remember that, during attendance on out-patient practice, prescribing is either done on very routine principles, or considerations of time and convenience render it advisable to order most drugs according to registered formulæ, which are merely referred to on the patient's notes by name. Thus, although the student may know that dyspepsia may be treated by mist. alk. amara, or debility by mist. quiniæ, he would perhaps experience some difficulty in writing a prescription suitable for either case. In the wards, of course, he sees much more prescribing, but is perhaps not very often called upon to do it himself, so that when he settles down on his own account it will be some time before he can handle medicines with that ease, confidence, and certainty, which can alone conduce to the comfort of his patients and his own ultimate success. Now it cannot be out of place to urge upon him, here, the great importance of frequently exercising himself in this art. Let him put problems to himself, let him run his eye through his text-books, and endeavor to order the several drugs in varied combination; when he meets with the recommendation to treat a certain disease in a certain way, let him there and then expand these more or less vague directions into the form of a prescription; and so, at last, due blending of ingredients, with the avoidance of incompatibles and the concealment of nauseous properties, will come to him with perfect ease and efficacy.

Another point, the mere mention of which may cause a smile, is the importance of occasionally inspecting, or even tasting, the mixtures we prescribe for our patients. Experiments of this nature will often do more to teach us the efficient combination of drugs than the most profound theoretical knowledge. It is by the experience gained in his own surgery that the country doctor is often found to order far more agreeable prescriptions than the hospital physician, and to steer clear of those hopelessly nasty concoctions which are occasionally sent out from the unwilling hands of druggists in obedience to the orders of scientific authority.

1. Combination of Drugs.—The first thing to be considered in writing a prescription is the object for which we order this certain combination of drugs, which symptoms in our patient's case do we wish to alter or modify, what is to be our principal ingredient, and in what quantity. This being duly settled in our minds, we reflect whether it is better to give this particular article by itself, or to combine it with other substances which may possibly assist or mitigate its action, or may at all events conceal its more or less nauseous taste. Now it is a very commonly given recommendation that in our prescriptions we should aim at simplicity as much as possible, and this certainly holds good within certain limits. The old-fashioned custom used to be to string together a long list of ill-understood substances, in the hope that some one or other of them might hit the right nail on the head, and even now traces of this polypharmacy linger about medical practice. When, however, we are tolerably certain of the action of our drug, and more especially when we are making scientific observations on its mode of action, it is often of great importance that we should not obscure its effects by the addition of any other active substances, but order it either simply in distilled water, or merely combined with other ingredients for flavoring purposes. But we must remember not to carry this principle too far. No fact is more thoroughly proved in therapeutics than the value, under certain conditions, of due combination, and the way in which one drug may assist the action of another.

Thus, taking the case of diuretics, we know well that a prescription containing three or four members of this group will often act where one produces little or no effect, and that mercury is of undoubted service in assisting the influence of squill and digitalis over the urinary secretion. Cough medicines are always best given in combination with a variety of drugs, and the same holds good of purgatives; for we all know how hyoscyamus or belladonna will both aid and hold in check the action of colocynth, how a little sulphuric acid and iron will promote that of sulphate of magnesia, how jalap aids the peristaltic intestinal contraction to remove the watery fluid which cream of tartar drains into the bowels.

Moreover, we all gladly acknowledge the advantage to be derived by the addition of a little iron to the digitalis which we give as a cardiac tonic, and to the ergot which is to stimulate the uterine functions, knowing, as we do, the important rôle which an improved blood supply necessarily plays under these circumstances. Narcotics also often gain in potency by combination, for do we not know that bromide of potassium and chloral together will occasionally cause sleep where either separately would have failed? Moreover, the use of compound anæsthetic vapors has been much popularized of late for this reason. Aromatics are often of great service in counteracting the griping tendencies of certain active purgatives, and the success which has been claimed in some special conditions for Warburg's tincture over quinine, is held to be due to the peculiar way in which the action of the active ingredient is reinforced by the somewhat complicated farrago of substances by which it is surrounded.

Arsenic is believed by some to prevent the unsightly acne produced by bromide of potassium; and the best mode of obviating the discomfort of cinchonism consists in adding a little hydrobromic acid to our quinine. [The combination of a small amount of opium or morphia with quinia has been also found to prevent the occurrence of the disagreeable nervous symptoms that sometimes occur, and at the same time it increases the antiperiodic power of the drug, so that smaller doses may produce equal therapeutic effect.]

Several alkaline medicines, given together, seem to act better in rheumatic fever than the simple administration of one member of the group. Tonics, such as quinine and iron, are blended with advantage. Then again, we add one drug to another for the purpose of counteracting some unpleasant physiological effect; thus spiritus ammoniæ aromaticus mitigates the unpleasant symptom of iodism, and atropia lessens the chances of discomfort which attend the subcutaneous injection of morphia. Instances like this might be multiplied almost *ad infinitum;* but we shall develop the subject further as we go on, and refer frequently to the laws which should guide us in considering whether the various drugs are best ordered singly or in combination.

2. Form of Administration.—We must take into consideration whether we ought to administer our drug in a concentrated or diluted form, and here again we shall find it necessary to act very differently under different circumstances. As a general rule, we may lay down that the metals are best given either in pill or in a small quantity of fluid, and this remark applies more especially to those which have very active physiological properties. Thus we generally give arsenic and perchloride of mercury [corrosive sublimate] in a state of only moderate dilution. Salts, on the other hand, and more especially the purgative salts, act best when taken in large quantities of fluid, and we shall find in practice that iodide of potassium is decidedly more efficacious when freely diluted, that sulphate of magnesia follows the same rule, and that in the case of diuretics also we may aid their action by combining the directly flooding or mechanically sluicing effect on the kidney of large quantities of watery fluid.

3. Proper Time for Exhibition.—The period of administration is also well deserving of careful study, and we may indicate one or two useful rules with regard to the action of alkalies and acids. As acids check acid secretions, and alkalies have a similar influence over those with alkaline reaction and *vice versâ*, we can readily understand the effect which they may exercise over digestion. Thus an acid given directly before a meal must interfere with the due assimilation of the nitrogenous articles of diet by checking the supplies of gastric juice, whereas an alkali given at the same time must theoretically produce the best results by stimulating that secretion. If, on the other hand, we give an alkaline medicine after food, we do harm by directly neutralizing the acid on which some part at least of the active principle of the gastric juice depends.[1]

[[1] An important lesson for the student to learn at the outset is, not to place too great reliance upon his own *a priori* reasoning con-

Drugs which have a distinctly lowering or irritating effect on the system are best given with or after meals, so as to prevent these results as far as possible; thus we always give arsenic or corrosive sublimate or strychnine at these times, and find that they are well borne by persons who could not take them on an empty stomach. For a different reason, again, we generally find it convenient to prescribe cod-liver oil after food, not only because it is less likely to cause sickness when given at that time, but because oily matters being absorbed by the lacteals are most readily taken up when these structures are in full working order.

Again, when we wish to imitate or excite a normal physiological action, we must time our drug accordingly. Opium, or any other narcotic, is much more likely to produce sleep when taken at night than at other times, and a mild purgative in the morning will often stimulate the peristaltic movement of the intestines to evacuate the bowels at the time when they are accustomed to act. Again, when we wish to re-excite a suspended menstrual flow, we will find our best chances of success in directing our remedies more especially about the time at which the monthly period ought naturally to appear.

The efficacy of purgatives is also markedly aided by a due consideration of the periods at which they ought to be given. A resinoid cathartic principle contained in pill is usually of slow and deliberate action, and may be given indifferently with meals—as in the case of dinner-pills—or on an empty stomach before bed-time; but saline purgatives generally act best when given fasting, as the veins of the intestinal tract are then less full and more predisposed to rapid absorption. As an illustration of this we need only refer to the much more potent effect of an ordinary seidlitz powder given before than after breakfast.

Anthelmintics, again, are always best given after as long a fast as possible, so that the parasites which they attack may not be shielded by food or mucus, and we find in prac-

cerning the therapeutical effects of remedies. Drugs in many instances have more than one action upon the economy; for instance, the antiseptic influence of hydrochloric acid may be more efficient in gastric disorders than its simple acid reaction; or the astringent effect of aromatic sulphuric acid may be especially serviceable. This therapeutic feature is entirely distinct from the varying effect produced by altering the size of the dose, which is considered further on.]

tice that early morning is the most convenient period for their administration.

4. Dosage.—The relative efficiency of large and small doses is the next point which has to be taken into consideration; and here we are at once confronted by some of the most delicate and difficult questions in therapeutics—delicate because they border closely on the dangerous ground of homœopathy, difficult on account of their often unsettled nature. We cannot pretend to give any exhaustive discussion to this branch of our subject, because the materials for it are not forthcoming, but we can all contribute somewhat to its solution by experimental trials of various drugs given in these different ways. This much, however, we do know, that in many cases we get far more satisfactory results in special emergencies, or temporary conditions, by giving one tolerably large dose at one time; and especially is this the case with narcotics, small quantities of which only excite and annoy, whilst a full dose satisfactorily brings about the desired result of sleep. Purgatives and emetics, again, are also best given in one considerable dose; tonics, astringents, and diuretics require to be steadily repeated at certain short and regular intervals in order to have a sustained and continued effect. But the true point at which we wish to arrive is this: Can we best obtain rapidly and efficiently the constitutional action of a drug such as belladonna, or aconite, by administering in average quantities two or three times a day, or by ordering it to be taken in very small doses often repeated? Now supposing we are called upon to treat a case of acute tonsillitis or catarrhal febrile disturbance, which we wish to remove as rapidly as possible, and we elect aconite as the special remedy to be used, the most reliable method for its administration is in drop or even half-drop doses every hour, half hour, or even ten minutes. General experience has pretty well confirmed this teaching, and has extended it to other medicines, such as prussic acid, which will thus more effectually control urgent sickness than when given at longer intervals in the more canonical way; to tartar emetic, which in very small and often-repeated quantities, exercises a remarkable effect over infantile bronchitis; to ipecacuanha, which in minim doses will frequently check obstinate vomiting; to calomel and gray powder, which in minute doses, every half hour, will often stop irritability of the stomach when nothing else will succeed. Instances of this sort will be multiplied as our consideration of the individual articles of the Pharmacopœia goes on, the principle being steadily kept in mind that we may often bring the system much more efficiently under the special influence of a drug, by ordering it in small quantity often repeated, than by giving full doses two or three times a day; and this necessarily applies with special force to those drugs which are rapidly thrown out of the system, and whose action upon the structure or function they are particulary supposed to effect, is thus kept up and, so to speak, perpetuated, by very frequent administration.

On the other hand, we must not forget that certain medicines must be given in very large quantities before their physiological properties are obtained. Thus it would be useless to expect succus conii to tranquillize irregular muscular movement in less doses than f℥j [Ph. B.; the succus conii, U. S. P., cannot be safely given in such large amounts, as its strength is variable]. Frequently we are required to give even more than this: belladanna is of no use in nocturnal incontinence of urine unless boldly pushed up to fʒj or fʒjss of the tincture. [In this connection it should be borne in mind that the British tincture of belladonna is only one-third the strength of that of the U. S. Pharmacopœia.] Arsenic acts best in chorea when prescribed with no timid hand.

Another point of interest in connection with this inquiry is, that drugs often display different and even opposing actions, accordingly as they are given in large or small doses. Thus we have seen that drop doses of vin. ipecac. will often check vomiting, whereas it is well known that a teaspoonful, or even less, will almost immediately evacuate the stomach; sulphate of zinc, in twenty or thirty grain doses, is prized as our best emetic, whilst it is equally established that from one to ten grains is a valuable nervine tonic, much used by some physicians in the treatment of chorea. [Quinia in doses of from two to five grains in a tonic; from six to ten grains, a stimulant; and in large doses is an anti-periodic and febrifuge.] Small doses of opium excite, whilst large soothe into sleep; half-ounce doses of infusion of digitalis may be more safely given than those of fʒj more frequently repeated; the neutral salts of potash and soda are, as a rule, purgative in large, diuretic in small, doses; and the other instances of this principle—which will afterwards be given—must be borne in the mind of the prescriber before he can pretend to make most efficient use of the weapons at his disposal.

5. The Interval between Doses.—The next heading to which reference is usually made is regarding how often we ought to repeat our dose of medicine; but this is so far involved in what has gone before, that very little remains to be said. The ordinary rule is to order our mixture to be taken three times a day, or every four hours, unless special circumstances, such as we have already indicated, render it advisable to repeat more frequently. Although many sick persons look forward to the time of taking their physic, and feel moral as well as physical support from the mere act of attending to their doctor's orders, the greater proportion are not so favorably impressed, and would willingly be relieved from the necessity of swallowing the often nauseous compounds they receive. Homœopathists, no doubt, derive much of their success from the tasteless nature of their medicines, and we have not yet devoted sufficient attention to the elegances and refinements of pharmacy. It is well, therefore, to direct our tonics and astringents, and drugs whose action is to be spread over some considerable time, to be taken three times a day, always bearing in mind those important exceptions which recent investigation has done such good service in impressing upon our attention.

6. Individual Peculiarities; Idiosyncrasy; Habit.—When the student has been fairly emancipated from the leading-strings of his teachers, and enters practice on his own account, he will often be disappointed at the way in which drugs play their allotted parts. The necessarily cut-and-dried and dogmatic descriptions of the text-books have led him to believe that such and such a medicine will always act in a particular way, and he accordingly prescribes it with full confidence in a given case. But not only may the proper effects fail of development, but very unpleasant and almost unlooked-for symptoms may follow its use, which will be productive of much discomfort and uncertainty, and may even tend to shake his professional credit. The influence of that strange individual peculiarity, usually termed idiosyncrasy, and of which no reasonable explanation has ever been given, must be very carefully taken into account in prescribing, and we shall refer to it on all suitable occasions. Sometimes it renders our patient unduly susceptible to the action of drugs, and thus we may find one person seriously salivated by one grain of calomel, another who dare not touch quinine, a third who is furiously excited by opium, whilst a fourth may be poisoned by a single grain of morphia. Phosphorus and bromide of potassium also occasionally cause their peculiar effects in very small doses. A good precaution, therefore, is, before prescribing any of these drugs, to ascertain from the patient whether he has ever taken any of them before, and whether uncomfortable effects could be in any way attributable to their use. But, on the other hand, our patient's constitution may be such that very large quantities of drugs will alone succeed in acting; and remarkable stories are told by Christison and others of the immense quantities of opium which persons quite unaccustomed to its use have been occasionally able to take with impunity. Purgatives act very differently on different people; and some require immense quantities of anæsthetic vapor before full insensibility is obtained. Although, as I have just said, we may often anticipate uncomfortable effects by due preliminary inquiry, it too often happens that they come on suddenly, and quite unexpectedly. Idiosyncrasy is so wide-spread and deep-rooted in the human constitution, in almost every function and action, that we can hardly hope ever to obtain the key to its mysteries. Why, may we ask, do particular articles of diet disagree with special persons? Why does one person, on exposure to cold, take a simple catarrh, whilst a second becomes a prey to rheumatic fever, and a third escapes unharmed? Why do we all differ from one another in some minor degree in almost everything that we do? Until we can clear up these problems, it is vain for us to attempt to explain why we require to adapt our doses so carefully to individual constitution and peculiarity; and the reason why the student is at first perplexed by all this is that we meet with these differences much more frequently in the upper ranks of society. The hospital or dispensary patient swallows any dose, however nauseous, with much satisfaction, and is much less often affected by those troubles ot irregular physiological action which so frequently harass the family medical attendant in more aristocratic circles.

The power therefore, and a power unfortunately too often uncommunicable to others, of appreciating the peculiarities of different persons in respect of their "behavior" towards drugs, is just one of those "knacks" which go far to make up success in practice. We ourselves often wonder, or share the surprise of others, why certain doctors, whose scientific attainments may be none of the highest, attract and retain in a remarkable way the confidence of their patients; and we may be sure that something beyond mere luck, or manner, or accident, is the true secret of their superiority. Tact in the use of remedies is no doubt in some degree the lever which has raised them to their positions, and more especially the power which well-remembered experience has conferred upon them of knowing intuitively, as we sometimes call it, what drugs will best agree with the individual sufferer. We yet know nothing of idiosyncrasy beyond the uncomfortable fact of its frequent and unsuspected existence, and, in proportion to our ignorance, all the more keen and persevering should be our search after those laws which must inevitably regulate its action. This it is which makes, and in the present state of our knowledge always must make, the deduction from experiment on animals so often fallacious when applied to the human subject. I am far from wishing to undervalue the benefits conferred on our science by experiment, but we must remember that brutes have their idiosyncrasies as well as ourselves, and, until both are thoroughly understood, therapeutics will lack much of the precision which it must eventually attain. And for the further elucidation of our own eccentricities in this way we must mainly trust to the labors of family practitioners, who will, we hope, be induced to publish the names from their great field of observation far more copiously than heretofore.

The influence of habit on therapeutics is also worthy of every consideration, for we shall find in practice that medicines often lose their effect when continued for any lengthened period. More especially is this the case with opiates and narcotics generally, the dose of which requires to be gradually increased from time to time. Arsenic has the same peculiarity, as is shown in the case of the arsenic-eaters of Styria, who, by long continuance in the use of that substance, are at last able to consume quantities which would inevitably prove fatal to a novice. And this leads to the question of *toleration*, an old-fashioned term dating from the days of heavy dosing with irritating metallic substances, but having sufficient bearing on modern practice to justify its consideration here. We have said that the term toleration savors somewhat of antiquity, because the great illustration of this principle used to be afforded by tartar emetic, which was then much more freely used in acute inflammations than now; and when I say antiquity I do not refer to anything more remote than perhaps half a century ago. Then the contra-stimulant treatment of pneumonia was in full swing, and the curious fact became gradually known that, although the first doses of tartar emetic often caused much nausea and depression, subsequently larger quantities were well borne; and this was explained by what was called toleration of the drug being established in the system. It will be seen, when we come to consider in detail the actions and uses of tartar emetic, that a very sufficient and scientific explanation can be given of this somewhat mysterious effect. In these days, inflammatory action is treated on somewhat different principles, and antimony is comparatively little used; but the principle of toleration can be recognized in the use of other drugs. Thus, in dysentery, quantities of ipecacuanha are given which would infallibly produce violent vomiting in a healthy subject; arsenic is better borne in skin disease than in a state of health; choreic patients are able to swallow almost emetic doses of zinc sulphate without the action of vomiting being induced. Digitalis is well known to be given freely in delirium tremens, and there is little doubt that the experiment of prescribing half an ounce of the tincture to a person in ordinary health would be productive of serious if not fatal consequences. Further instances of toleration might readily be adduced, but it will be much more to the advantage of the student to recommend him to pick out other examples for himself than to provide him with a cut-and-dried list of all that is known on the subject.

7. Constitutional, or Toxic, Effect from Small Doses.—We next come to what is commonly known as *accumulation*, the theory of which is that certain drugs rest or become stored up in the system until they reach a dangerous quantity, when inconvenient or poisonous symptoms may result. Thus we know that after a certain continuance in the use of digitalis, faintness and depression have often been observed, that strychnia may cause uncomfortable twitchings after it has been taken for some time, that bromide of potassium only begins to cause annoyance when the system seems to have become saturated with the salt. Does this really mean that these substances have reached the point beyond which their poisonous action is neutralized, so to speak, by the symptoms which their therapeutical powers attack, or is the defect in the organs of elimination which fail to expel them efficiently from the system? It is probable that both these and the numerous other examples which our subsequent pages will contain depend on both these causes in some degree, in addition to another, and that is that the organ or tissue towards which the physiological action of the drug is directed is, after long-continued stimulation by repeated small doses, worked up into a certain condition of special excitement or depression, and discharges accordingly. Thus we find the twitchings from strychnia, the cardiac depression of digitalis, the nervous weakness and ataxy from bromide of potassium, the paralysis resulting from alcohol. The metals, as mercury, arsenic, etc., on the other hand, no doubt act by being stored up within the tissues, being brought into excessive action by some defect of elimination.

And the practical outcome is, that in prescribing many of these drugs, and more especially digitalis, strychnia, and bromide of potassium, it is well to have an occasional break, to omit our prescription for a day or two, so as to give the parts a rest, and enable the remedy to act afterwards with better effect perhaps in even diminished dose. It may happen that some of these uncomfortable effects are caused by defects in the organs of elimination, and it is therefore very important, when prescribing certain drugs, and more especially salicylic acid, to satisfy ourselves, by careful examination of the urine, that the kidneys are in thoroughly good working order. Recent experiment seems to show that rapidity of elimination is encouraged by the high temperature of the solution in which the drug is dissolved.

8. Chemical and Physiolgoical Incompatibilities.—And now we come to the doctrine of incompatibility, which is of all-essential importance in therapeutics, consisting as it does of the principles which we require to know in order to avoid that amount of clashing of the different ingredients of our prescription which may either alter or destroy their action. Now incompatibility may be of different sorts, and is generally divided into chemical and physiological. Of these we will first consider chemical incompatibility.

This consists in the chemical action of one drug on another, which may result in the formation of a new compound when they are mixed. Thus the addition of iron to decoction of cinchona will produce an unsightly, black mixture; strychnia and perchloride of mercury will not go with gelatine; sulphuric acid and lead form an insoluble sulphate. A good deal of this incompatibility, however, is inconvenient, principally, because the resulting solution is often thick, turbid, and unsightly, and therefore repugnant to the patient. Many most incompatible mixtures are therapeutically efficient, and some are even prescribed deliberately. Quite otherwise is it, however, with the second group, or the physiological incompatibles, the *rationale* of which is that the action of one drug is so far antagonistic to that of another that the mixture of the two is necessarily inert. Thus the combination of belladonna and opium is in some degree opposed, so is atropia and prussic acid, aconite and digitalis, strychnia and Calabar bean, and, most markedly of all, caustic alkalies with belladonna, hyoscyamus, stramonium, or tobacco, all of whose active principles are thus absolutely destroyed.

But, as already hinted, we often prescribe an incompatible mixture for the purpose of actually deriving therapeutic advantage from the resulting compound. Thus what is a more generally used and, I may confidently say, more useful prescription than bichloride of mercury and iodide of potassium, making an iodide of mercury, which is much more efficacious than that salt itself as prepared by more elaborate chemical agency?[1] Again, the far-famed mist. ferri co. derives much of its charm from the freshly prepared carbonate of iron which results from the due combination of ferric sulphate and potassium carbonate. Black wash is another example; and although corrosive sublimate and decoction of bark are undoubtedly incompatible, no better means is known of counteracting the depressing effects of this preparation of mercury than by this form of administration.

[Some of the principles of incompatibility, as applied to the writing of perscriptions, may be conveniently formulated as follows:—

[[1] It is true that these salts in solution are chemically incompatible, as a reaction takes place, and a precipitate is formed. This precipitate, however, is soluble in an excess of potassium iodide, forming an uncertain compound, which may be looked upon as a hydrargyro-potassic iodide, dissolved in a solution of potassium chloride, with other compounds not positively determined.]

General Principles of the Incompatibility of Drugs.—1. As a rule a drug is incompatible with its *antidotes* and its *chemical tests*, especially if the latter depend upon the forming of an insoluble precipitate; thus metallic salts or albumen should not be prescribed with substances containing tannin, nor chlorides with nitrate of silver. Therefore, in combining soluble salts with each other, or with infusions, be careful to see that an insoluble precipitate is not unintentionally formed.

2. The alkaloids are precipitated by tannic acid and caustic alkalies, and may be destroyed by chlorinous compounds.

3. The alkalies, as a rule, precipitate metallic salts.

4. Mineral acids decompose salts of vegetable acids, and other salts where they have a superior affinity. They form ethers with alcoholic preparations.

5. The glucosides, such as salicin, santonin, and colocynth, are decomposed by free acids, or emulsin.

6. Tinctures in general deposit resin on adding water, which also precipitates iodine from its alcoholic solution. Infusions containing tannic acid are incompatible with metallic salts generally.

Special Incompatibles.—In accordance with the first rule given above, the table of antidotes placed at the end of the book will for the most part suggest the individual incompatibilities.

The following should as the rule be exhibited alone, or simply dissolved in distilled water: corrosive sublimate, tannic acid, strychnia, preparations of lead and of iodine, and nitrate of silver. With glucosides, or creasote, the latter forms an explosive compound, and it should never be prescribed in pill with vegetable extracts.

A mixture of chromic acid and alcohol is explosive, and so is chlorate of potassa, when powdered with sulphur or tannic acid.

Aromatic waters sometimes precipitate metallic salts, on account of containing a small amount of carbonate of magnesia.

Syrup of squill and of garlic contain free acetic acid, and are incompatible with carbonates.

Tincture of chloride of iron precipitates quinia from the solution of quinia sulphate, but to some extent redissolves it when in large excess.

Solution of acacia gelatinizes with tincture of the chloride of iron and with borax. It is precipitated by solution of subacetate of lead, and by alcohol.]

9. Prescribing for Children.—A few words may now be said on the art of prescribing for children, a subject which is only incidentally touched upon in our ordinary books, and is then treated in a somewhat misleading manner. Elaborate tables have, however, been drawn up for the regulation of doses according to age, and in all of these it is assumed that young children necessarily require much smaller doses of most drugs than adults; and this is true in so far that it is seldom advisable to deal out our mixtures to them in the time-honored tablespoonful or two tablespoonfuls of their elders. But the important fact which these systems invariably ignore is this, that children can often take, not only with impunity, but even with decided benefit, quantities of active remedies which will correspond to the full adult dose. And the reason of this may be looked for in the much greater destruction and construction of tissue in early life, whereby the organs of elimination are in unusual activity, and hence disposed to excrete medicinal substances with special promptitude. Whether we accept this explanation or not, however, I may warn the young practitioner that an adherence to the rules usually laid down for children's prescriptions will cause him serious disappointment, and that he will be surprised at the beneficial results which will often follow the adoption of a bolder course.

To furnish a few examples of this proposition, I will begin with belladonna, which may be used very freely in childhood, and the dose of which I have pushed, in a child of ten years of age suffering from incontinence of urine, to f℥ij[1] with good effect, and the development of only very mild forms of physiological disturbance. I commonly begin with ♏xx[1] in a child of two or three, and have prescribed ♏x[1] in an infant of six months with remarkable benefit; and the result of my experience undoubtedly is, that children bear belladonna actually better than grown-up persons, and that in them really poisonous symptoms rarely if ever occur. I may add that this strange insusceptibility of children to belladonna was first pointed out by the late Dr. Fuller, and has since been abundantly confirmed by Dickinson, Ringer, Kelly, and others.

[[1] British Pharmacopœia.]

Arsenic may also be freely given to children, and, at the age of five or six, I should have no hesitation in beginning with ♏ v [of Fowler's solution] and pushing even up to ♏ x if necessary. Strychnia is also well borne. Tinct. ferri may be taken in large quantities, and I have seen excellent results follow the administration of fʒj ter die, in a little girl of six years.

Children will often require large purgative doses, more especially of pulv. jalap. co., and of ipecacuanha as an emetic. I have often ordered quantities which have startled the dispenser, and induced him to come for explanation under the idea that I had made a mistake. Bromide of potassium may also be freely given, and other instances will be noted as we go on, remembering always the sound old advice to be very careful with opium at an early period of life. Every practitioner has no doubt seen cases in which ill results have unexpectedly followed laudanum prescribed before the age of one year, and I cannot do more than reiterate the warnings on this subject which every manual of materia medica most properly contains. The explanation of this possibly enough may be, that the open fontanelles of early childhood permit a much more sudden and effective increase in the quantity of blood contained within the skull than in adult life, and some confirmation of such an opinion may be found in the fact that very young infants will usually bear large doses of those narcotics which act by causing anæmia of the brain, and notably of chloral hydrate, which I have prescribed with benefit in five-grain doses thrice a day to a little child only twelve months old.

It is always well to make our dose as small as possible, one or two teaspoonfuls being usually sufficient, and great pains must be taken, by means of well-adjusted flavoring ingredients, to disguise the too often nauseous taste of our drugs. Various syrups and aromatic waters here stand us in good stead, and it is well if possible, when dealing with very young infants, so to reduce the bulk of the medicine as to enable it to be mixed unobserved with milk, veal-broth, beef-tea, or some sort of confection. In this there is nothing really antagonistic to the principle which has just been developed, as we can readily enough give considerable quantities of belladonna, arsenic, etc., in comparatively small quantities of water, or even in none at all.

Children are, however, somewhat strangely capricious in their taste; for whilst they object decidedly to bitter or acid substances, they will take oils readily, and generally seem to derive satisfaction from sucking in cod-liver oil. Nauseous powders which would seem inexpressibly revolting to their elders, they often take well, and by a little contriving and consideration we can generally manage to persuade them to consume their dose with philosophic composure, if not with actual relish.

We may now briefly consider two very interesting points.

First, the effects of drugs administered to a nursing mother on the child. Of this, of course, we have ample evidence, knowing, as we do, of the elimination of many medicines by the milk, such as iodide and bromide of potassium, rhubarb, and lead. We often find that infants are griped and made uncomfortable by their mother's medicine, and we must remember this in prescribing, even if we are allowed to forget it by the patients themselves, who are usually well informed on this point. But little advantage has hitherto been taken of this way of treating young children, and it seems hardly admissible to recommend a larger recourse to so roundabout a plan, as some of the substances used in this way might check the secretion of the milk by impairing the health of the mother, and as there is no real difficulty in giving effective doses of therapeutic agents to children even at so early an age.

When we come to number two, however, some interesting speculations are encouraged, for we have to consider in how far we can modify or affect the condition of the fœtus in utero by drugs administered to the mother. There is no doubt that a strain of syphilitic infection has been arrested by mercury given to the mother during pregnancy, and that the infant thus vicariously treated was the first out of a long series which proved to be free from all specific taint. Iodine and salicylic acid have been detected in the urine of the fœtus whose mother had taken those substances, and Dr. McClintock, of Dublin, records six cases in which the regular recurrence of abortions was checked by giving iron and chlorate of potash[1] to the mother. For a full ventilation of this subject, and a large mass of evidence and opinions on either side, we may refer the reader to a discussion in the New York Obstetrical Society, January, 1877.

---

[1] Brit. Med. Journal.

10. Prescription Writing.—We next come to the construction, or what we may call the anatomy, of the prescription itself, how it is put together, and how its component parts are arranged; and we commence with the '℞' with which it begins, and which originally meant an invocation to Jupiter. But, conventionally it has been held to imply the verb *recipe*, which governs the quantity in the accusative, the name of the medicine being put in the genitive. Thus, *Recipe* (take) *pulveris* (of powder) *scammoniæ* (of scammony) *scrupulum* (a scruple), etc. Other directions are laid down in books which deal with this question, and much valuable information is contained in Pereira's 'Selectæ Præscriptis' and the clear and instructive little work of Dr. Griffith, of Dublin; but it is hardly necessary to reproduce these here, as students beginning their medical curriculum are presumably sufficiently well grounded in classics to enable them to understand the very moderate amount of Latin required for their use in prescribing. As a rule, most medical men write their directions now-a-days in English; and this has not only the advantage of limiting the chance of mistake, but it does away with much of that mystery which beyond anything else has tended to keep back the progress of our art. In these enlightened times, when even more than a smattering of physic is commonly possessed by the laity, we do not find our patients quietly consenting to be kept in the dark as to what medicines they are taking. Rather we find them showing a keen interest in our prescriptions, anxious to inquire, and argue, and, if possible, understand all about the line of treatment we have determined to pursue. The cases are very rare in which it is necessary to conceal from them the presence of any particular drug in their mixture, and Latin directions are therefore not only unnecessary, but pedantic in the highest degree. It is still, however, the custom at examining boards to ask the candidates to write and read prescriptions fully constructed according to this custom, and in the prescriptions which we shall frequently add to our descriptions of the various drugs we shall invariably give the directions in Latin of the usual form.

11. Weights and Measures.—It only remains for us, then, to add the signs and symbols in general use, which are as follows:—

gr., granum	=			1 grain.
℈, scrupulum (scruple)	=			20 grains.
ʒ, drachma (drachm)	=	3 scruples	=	60 grains.
℥, uncia (ounce troy)	=	8 drachms	=	480 grains.
℔, libra (pound)	=	12 ounces troy	=	5760 grains.

♏, minimum	=			1 minim.
fʒ, fluidrachma (fluid drachm)	=			60 minims.
f℥, fluiduncia (fluid ounce)	=	8 fluid drachms	=	480 minims.
O, octarius (pint)	=	16 fluid ounces, U. S. P.	=	7680 minims.
C, congius (gallon)	=	8 pints	=	61440 minims.

In the British Pharmacopœia the time-honored drachm and scruple weights have been discarded, and all who prescribe or dispense medicines are recommended to discontinue their use; but old-fashioned customs are not so readily swept away, and we accordingly find these most convenient terms flourishing as much as ever. In domestic practice we find a much more rough-and-ready mode of prescribing, the generally received measurements being as follows:—

Drop, usually about ½ minim	=	gtt., gutta.
Teaspoonful	=	1 fluid drachm.
Dessertspoonful	=	2 fluid drachms.
Tablespoonful	=	4 fluid drachms.
Wineglassful	=	1½ to 2 fluid ounces.
Teacupful	=	5 fluid ounces.
Breakfast-cupful	=	8 fluid ounces.
Tumbler	=	10 to 12 fluid ounces.

Of all domestic modes of measurement, however, none can equal the drop in fallacy and danger. The size of a drop is influenced first by the shape of the bottle, and secondly by the quality of the fluid itself, and hardly any two substances will be found to contain the same number of drops in a given quantity.

Tablespoons, teaspoons, and all domestic measures are most absurdly variable in size, and we shall do well steadily to discountenance their use in all cases, and to insist that our patients shall carefully regulate their dose by means of those graduated glasses which are within the reach of all but the very poorest.

12. Observations upon Doses.—Now, although it would manifestly be lulling our readers into a false security, were we to attempt to lay down any absolute rules respecting dosage, we may venture to state some broad principles which will help the memory. Students often complain of the great difficulty they experience in remembering doses, and at first sight it would appear a most irksome task for a person not in the habit of prescribing to carry in his mind the major and minor quantities of drugs which he may safely order. But by giving a few rules, and adding exceptions, as in the Latin grammar, we hope to show that there is no real difficulty here, but that we may safely group substances in such a way as to associate their doses with one another with tolerable simplicity. But first let me say one word about the British Pharmacopœia. Constructed as it was by official authority several years ago, it is naturally looked upon as our *vade mecum*, and every student is supposed to possess a copy and to make himself familiar with its contents. Now, in the first edition no doses were given, and in the next, although these were added in deference to a universal request, it was expressly stated that they were not to be considered authoritative, or specially enforced by the Medical Council. But the Pharmacopœia, being the only official guide, has new been forced into a position respecting dosage which it did not intend nor desire, and we therefore find that in any case of difficulty its authority is invariably appealed to. It lies on every druggist's counter, it is the standard in courts of justice, and, this being the case, it ought to reflect the most advanced researches on its subject. But this is not so; on many points its recommendations are hopelessly at variance with modern practice, and we are hence exposed to the annoyance and possible discredit of having our prescription sent back or cut down by druggists who are afraid of exceeding the dose sanctioned by authority. Thus the maximum dose of succus conii is fixed by the Pharmacopœia at fʒj, of quinine at gr. x, digitalis fʒj; and when we come to consider the various substances in succession, we shall find many other examples of a discrepancy between my teaching and its statements, which this explanation will clear up. [These difficulties are happily avoided by the United States Pharmacopœia, the doses of remedies being judiciously omitted.]

13. General Rule for Doses.—We may now proceed to indicate the natural system of grouping, by which some order may be given to the arrangement of the doses of drugs in the already crowded brain of the student or the young practitioner.

Thus let him remember that, as a general rule, tinctures may be prescribed in doses of from ♏x to fʒj, infusions and decoctions from f℥ss to ℥ij, powders from two to ten grains, pills four to ten grains; and although there are numerous and very important exceptions to this, the recollection of the principle will spare us from the drudgery of placing the exact dose after every preparation whose action we shall examine.

[The following are the important exceptions to this rule, the dose of each of which should be learned separately.

Tinctura aconiti radicis, U. S. P.
" belladonnæ, "
" cannabis, "
" cantharidis, "
" colchici, "
" conii, "
" digitalis, "
" ferri chloridi, "
" hyoscyami, "
" iodinii, "
" iodinii compositæ, "

Tinctura nucis vomicæ, U.S.P.
" opii, "
" " acetata, "
" " deodorata, "
" scillæ, "
" stramonii, "
" veratri viridis, "
Infusum digitalis, "
" capsici, "
" tabaci, "]

These rules may be borne in mind in a general way, and we shall now go on to consider very briefly the plan of arrangement to be pursued when we come to consider the various medicinal substances seriatim.

Our object will be in the following pages, in discussing the properties of drugs, to balance, as far as possible, their physiological against their therapeutical action, arranging them in corresponding columns in diagrammatic form; and it will greatly assist this arrangement, as well as aid the memory of the student, if we adopt the following order in stating what we know respecting the properties of each drug.

Take, first, its local or external action.

Then its influence on the brain and on the spinal and sympathetic system of nerves.

This will lead us up gradually to the effects on the heart and bloodvessels, whose functions are presided over and ruled by nervous influence.

The effects of the drug on respiration and temperature will next be considered, and we then proceed to the alterations of secretion in the following order, urinary, intestinal, salivary, cutaneous, etc.

Then other actions which come under no heading, and which may be called specific.

Finally, we must consider the various modes of elimination from the body, the antidotes, contra-indications, and best modes of prescribing; winding up, in most cases, with a prescription which will, as far as possible, combine efficiency and elegance with palatability.

It will of course often happen that we cannot accurately balance the physiological against the therapeutical action of a drug, either from want of sufficient knowledge, or from an excess of facts of more or less conflicting nature. We must remember that our therapeutical evidence is derived from clinical observation on man, and that experiment on the lower animals has supplied us with most of our knowledge respecting the action of medicinal agents on the healthy organism. Fallacies may readily creep into both these methods of investigation, and it is evident how the clinical method may be hampered by our want of full knowledge of the natural history of disease. Although late years have done a good deal in showing how various acute maladies behave, when uncomplicated in their course by active medication, we are still much in the dark, and too prone to confuse the *propter* with the *post*. And the results of the very elaborate system of experimentation, which has lately been carried on in Germany and elsewhere, cannot be accepted as fully conclusive of the physiological action of the various drugs on man. One source of fallacy undoubtedly lies in the very differing susceptibility of certain members of the brute creation to certain drugs. Thus rabbits freely digest belladonna as well as opium; it is difficult to poison pigeons with strychnia, or fowls with prussic acid; and other instances of this curious law have been placed on record. It is therefore reasonable to suppose that the special structure and habits of the lower animals exercise an equally modifying influence with regard to the special action of medicinal substances on special organs and functions, so that we must be prepared to receive some facts drawn from this source with a certain amount of reserve. In addition to this, the shock and general damage inflicted on the victims of experiment by the necessary manipulations must frequently alter so seriously the conditions of secretion as to render any deductions on this score very inconclusive; whilst, finally, it is well known that drugs which appear to have no action on a special organ whilst in health may very materially modify its condition when congestion or any other form of morbid action has set in. In looking over, therefore, the large mass of evidence furnished by the industry of able physiologists, we cannot fail to be struck by the discrepancy which exists occasionally between the results obtained. Skilled observers experimenting in different ways now and then get different results, and in no case has this been more distinctly shown than by the way in which the labors of the celebrated Edinburgh Committee have been practically set aside by later investigators, who have shown that mercurials, as well as other drugs, actually do increase the biliary secretion. We must therefore bear all this in mind, and endeavor so to sift all our evidence as to place in our tables only that which the opinion of our best authorities has thoroughly and fully endorsed.

In making observations on drugs, we must never forget to allow for the varying action which they may have on the system in health and in disease. A remedy which has no special physiological influence on the normal organism, may exert a very appreciable effect on morbid conditions, either by removing some obstruction to the natural processes of nutrition or secretion, or by supplying the want of some vitally essential substance. Thus, antipyretics, like alcohol, quinine, digitalis, and the like, produce their lowering effect on the body heat far more effectually under pyrexial than normal conditions. Iron and phosphorus, which increase the number of the red corpuscles in anæmia, have no such action in healthy blood; and mercury, which will blanch a sound skin, will speedily restore a healthy bloom to the victim of syphilis. Other instances will present themselves in the following pages, and the principle is one which must always steadily be held in view.

THE METRIC SYSTEM IN MEDICINE.[1]

In order to translate our prescriptions into the metric system when so desired, it is only necessary to bear in mind that the Gramme or unit of weight is equal to nearly 15½ grains (troy), and that a gramme of water occupies the space of a cubic centimetre. The relation therefore between the two systems would be as follows:—

OLD STYLE.		METRIC.
♏ j or gr. j equals		06 Gm.
f ʒj or ʒj "	4	"
f ℥j or ℥j "	32	"

The decimal *line* instead of *points* makes errors impossible.

As .06 Gm. (Drug) is less than a grain, while 4. and 32. (Vehicle) are more than the drachm and ounce, there is no danger of giving too large doses of strong drugs.

C. C. (cubic centimetres) used for Gms. (Grammes) causes an error of 5 per cent. (excess).

A teaspoonful is usually 5 Gms.; a tablespoonful 20 Gms.

---

[1] For a complete exposition of the metric system, see Weights and Measures at the end of the book.

REMARKS

ON

CERTAIN CLASSES OF REMEDIES.

ACIDS.

We will first take up the consideration of acids, and, before enumerating the therapeutic properties of each individual member of the group, it will save time and repetition if we draw attention to the collective actions and uses of acids in general.

External Action.

Physiological.	*Therapeutical.*
Acids, being possessed of high diffusive power, rapidly permeate tissues to which they may be applied, coagulating their albumen, and, if concentrated, absorbing their watery constituents and causing their destruction.	Acids, if used in concentrated form, therefore, act as *caustics*, eating away and destroying animal tissues. When more diluted they are *astringents*, hardening and constringing weakened parts and checking unhealthy secretions.

Internal Action.

1. *On Circulation.*—It is stated that phosphoric and acetic acids diminish the force and frequency of the pulse, and reduce the number of blood corpuscles.	1. No therapeutical use, however, has been made of this physiological deduction from experiment. [Possibly this may be explained by their interference with the digestive functions.]
All the acids, however, have the property of increasing the acids of the blood,	The action of acids in checking hemorrhage is thus explained, as there is no doubt

probably rather by setting free another acid than by a direct action on that fluid; for by the time they enter the circulation they are themselves converted in great measure into salts by the various alkaline secretions with which they have come in contact.

They may also contract the smaller bloodvessels by reflex action, or by directly astringing them locally.

2. No special effects on the *respiration* or *nervous system* have been noted, but phosphoric and acetic acids are said slightly to lower the temperature.

3. Their action on *secretion* is interesting, and has been specially pointed out by Ringer. It appears that an acid applied to the orifice of a gland secreting an acid fluid will check that secretion, and thus any member of this group taken into the stomach before or at the beginning of the process of digestion will tend to act unfavorably by stopping the flow of gastric juice.

that coagulation of fibrin in the vessels is prevented, and its fluid condition normally maintained and encouraged by an alkaline condition of the blood.

They are useful in external hemorrhage, and to check excessive perspiration.

3. This physiological action points to a valuable bearing on therapeutics. Some cases of dyspepsia depend on a deficient production of gastric juice, enough of this fluid not being secreted under the stimulus of food to dissolve and digest the albuminous constituents. This condition may be remedied by mechanically supplying the want by a little acid given some time after food. But again, still more cases of disordered digestion are caused by an excessive formation of gastric juice, the surplus supply of acid teasing and worrying the mucous membrane of the stomach, and causing pain, sour eructations, and general distress. Here our physio-

But if acids arrest secretions having their own chemical reaction, they stimulate those which are alkaline, markedly increasing their quantity.

4. *On the Urine.*—Acids increase somewhat the acidity of the normal urine, but have no power of rendering an alkaline urine acid. This property is alone possessed by benzoic and citric acids.

logical law comes into play, and we check the over-secretion by giving the acid immediately before the meal. Or again, discomfort may result from irregular or excessive fermentation of food, giving rise to the formation of a large quantity of acetic, butyric, and lactic acids; and this undue fermentation is found to be itself directly controlled by acids given in this case after food. Possibly some of their influence in checking acid perspiration may be due to this law.

We can thus explain what has been called the refrigerant action of acids, or their undoubted influence in relieving thirst and imparting a fictitious sensation of coolness. By stimulating the secretion of the salivary glands, we moisten the dry, parched mouth of our fever patient, and quench his thirst perhaps better than in any other way.

It is probable also that some at least of the beneficial influence exerted by acids on chronic biliary derangement is due to their directly increasing the flow of alkaline fluid from the liver.

4. An alkaline state of the urine being due either to spinal debility or actual disease, the action of alkaline remedies, some dyspeptic tendency, or to local bladder causes, it must be variously

	treated by appropriate remedies.
Acids, by their astringent properties, brace up relaxed mucous membranes, and check unhealthy secretion.	They are, therefore, good tonics, and act well in diarrhœa and profuse sweating.

DISADVANTAGES.

The prolonged use of acids is apt to exercise a very unfavorable influence on digestion, rendering persons pale and languid, and causing a good deal of emaciation; and this was no doubt the secret of the action of vinegar in reducing corpulence, which used to be so highly prized in the Byronic days, and by incautious indulgence in which so many ignorant people have at various times ruined their health.

POISONOUS EFFECTS.

The symptoms consist of very violent burning pain in the stomach and intestines, vomiting, purging, intense prostration, and death either by shock or by the results of secondary inflammation. On *post-mortem* examination, intense inflammation of the stomach and intestines is found, with ulceration of the mucous membrane, and even perforation into the peritoneal cavity; and if the case is of a more lingering character, fatty degeneration of various internal organs, but more especially the kidneys, becomes gradually developed.

ANÆSTHETICS.

For a full discussion of the physiological and other properties of anæsthetics the reader is referred to the subjects of Ether, Chloroform, and Nitrous Oxide Gas in the succeeding section. The consideration of their relative value, as stated by Dr. Clover, may be here briefly considered under the head of

THE CHOICE OF ANÆSTHETICS.

[For ordinary surgical cases, ether is safer than chloroform.

Chloroform is most suitable for children and for aged persons with brittle arteries, also for sustaining the anæsthesia during protracted operations inside the mouth. In some cases of operation on the eye, when it is desirable to diminish the hemorrhage, chloroform is better than ether. In midwifery practice the same may be said.

Laughing-gas is best for ordinary tooth-extraction, for reducing luxations or moving stiff joints, for opening abscesses and fistulæ, and other cases where anæsthesia is required only for a short time. For those operations which last from five to fifteen minutes it is found that laughing-gas, followed by a small quantity of ether, and a very limited supply of fresh air, is the anæsthetic least often attended by sickness. The recovery of sensation is, however, much more rapid than when chloroform or ether alone has been used to the same effect, and where great pain is expected to result, a hypodermic injection of morphia is also needed.

The mixture of nitrite of amyl with chloroform has been strongly advocated recently by Dr. Sandford, an American physician. I have tried it in a dozen cases, and find that it produces insensibility rapidly, and, if the anæsthetic is then removed, the recovery is very satisfactory; but when the inhalation is continued for three or four minutes there seems to be nearly as much subsequent depression and nausea as if pure chloroform were given. The nitrite has also the effect of producing a sense of fulness in the head in the surgeon and assistants, which is rather objectionable.—C.]

ANTHELMINTICS.

The human body being infested with various parasites, whose presence is inconvenient and even dangerous, it is necessary for us to be provided with means for their safe and speedy removal. Some of these unwelcome guests are, unfortunately, out of the range of medicine; but others are so placed that they can readily be destroyed; and we shall arrange them in classes, according to the several drugs which act especially upon them.

1. **Tape-worms** are, the tænia solium, derived from eating measly pork; the tænia medio-canellata, from veal or beef; and the tænia lata, from salmon. These occupy the small intestine, and give rise to various ill-defined but un-	1. The best remedy for the teniæ is now believed to be male-fern oil given on an empty stomach; but if this should possibly fail, we may have recourse to kousso, turpentine, pomegranate root [pelletierine], or areca nut.

comfortable sensations; the only truly diagnostic symptom being the actual passing of joints by stool.	We must remember that, although these remedies kill the worms, they do not necessarily expel them from the intestines, and that a purgative may be required for this purpose; and it is also essential to find the head of the tape-worm before we can assure our patient that he is freed from his tormentor.
2. The **round-worm,** or **ascaris lumbricoides,** inhabits the small intestine, and occasions a long array of nervous symptoms, more especially in children. These worms are supposed to be introduced into the system by impure water.	2. Santonin acts as a true specific in at once destroying these troublesome parasites. [It is usually combined with calomel and soda to prevent the peculiar symptoms of santonin poisoning.]
3. The **thread-worm,** or **oxyuris vermicularis,** is found in the cæcum or colon, and causes much itching and irritation. They are almost universal among the children of the poor, but opinions differ as to whether they must be regarded as the cause or the effect of the peculiarly cachectic condition with which their presence so often coincides.	3. It would seem rather a roundabout practice to attack parasites in the lower gut by drugs administered through the mouth; and although purgatives, such as scammony calomel, jalap, etc., are of use in these cases, our chief reliance must be placed on enemata of quassia, tincture of iron, lime-water, common salt, etc.
Other forms of parasitic intrusion within the various tissues are well known, but are generally incurable; and the trichina spiralis and the various forms of hydatid disease, when placed in inaccessible organs, must usually be permitted to run their destructive course unchecked.	In the general treatment of parasites, we must not trust entirely, however, to the use of anthelmintics, but must also exclude all possibility of infection by forbidding raw or underdone meat, or fish, and by insuring general cleanliness and an efficient water-supply. In addition to this,

When hydatids are placed, however, in the liver, they are frequently effectually removed by tapping, whilst those in the lungs not uncommonly undergo spontaneous cure.

we must remedy the unhealthy condition of mucous membrane which favors their development, by giving alkaline remedies and bitter tonics in various forms of combination. [Glycerine is efficient in trichiniasis.]

In prescribing our remedies for the expulsion of the tapeworm, it is well to insure a thorough evacuation of the intestines, so that the parasite may not be in any way shielded from the action of the drug by food or mucus. After a preliminary purge, we direct our patient to fast for a few hours, and then administer the fern-oil in milk, either at bed-time or in early morning.

PARASITICIDES.

The *various* external parasites which infest the body may be divided into:—

1. *Animal*, including the Guinea-worm, the *acarus scabiei* of the itch, and the various pediculi met with on the head, pubis, and other hairy regions.

1. The Guinea-worm is removed by gentle traction; the itch insect destroyed by sulphur or staphisagria; and the lice killed by mercurial applications [or insect powder].

2. *Vegetable*, to which parasitic skin-diseases are due. Thus we have the *microsporon furfur* of pityriasis versicolor, the *Achorion Schonleinii* of favus, the *Tricophyton tonsurans* of tinea tonsurans, and the various other forms met with in tropical practice.

2. The various parasitic diseases of the skin are of too well-known obstinacy, and may be treated in a variety of ways. Iodine, acetic acid, chrysophanic acid, mercurials, sulphurous acid, carbolic acid, and a long array of drugs have each their enthusiastic partisans.

ANTIDOTES.

The first thing to be done in any case of poisoning is to

This may be effected in the first place by emetics, and empty the stomach, and to eliminate the poisonous substance from the tissues. Some qualification however must be made in the case of such rapidly absorbed and active poisons as prussic acid, in which the stomach-pump brings away nothing, and only adds to the general shock. We must here have recourse at once to the other measures indicated below.

The next stage in our proceedings must be to obviate the tendency to death, according to the various vital processes attacked by the poison.

Having got so far, we must then proceed to use our anti-

more especially those of the direct class; but it will often happen, particularly in narcotic poisoning, that emetics will not act, and that we are forced to have recourse to the stomach-pump. Caution in the use of this instrument, however, is requisite in cases of irritant poisoning in which the mucous membrane of the stomach is softened or partially destroyed. When evacuation of the stomach has been completed, we may employ gentle purgatives and diuretics in addition to such remedies as iodide of potassium, which favor the elimination of metallic substances.

Thus, if cardiac syncope be the main symptom, we must give stimulants; if the respiratory centre seems in danger of becoming paralyzed, we must excite respiratory action by cold affusion, irritation of the skin, and the employment of artificial respiration, and give atropia, which stimulates the origin of the pneumogastric nerve in the medulla; if narcosis prevail, we must endeavor to rouse the brain; and if irritation of any particular organ arises, we must soothe it by appropriate remedies. [The aid of electricity will be found to be not only useful, but in some cases absolutely indispensable.]

1. Among the first class we may rank alkalies in acid

dotes proper, which may be divided into (1) Chemical, which directly neutralize the action of the poison by destroying its properties; and (2) Physiological, which have distinctly antagonistic properties, being, indeed, in many cases, absolute counter-poisons, and the progress of physiology and therapeutics has recently largely added to our knowledge of these.

poisoning, animal charcoal as rendering the vegetable alkaloids innocuous, and liquor potassæ as depriving belladonna and its congeners of all physiological power.

2. The second contains all those various substances which will be found described here and there in these pages as directly antagonistic to one another, as opium within certain limits to belladonna, Calabar bean to atropia and strychnia, aconite to digitalis; and this class of antidotes has the advantage over the more purely local or chemical, that they are able to pursue their foe into the blood, and attack it boldly and successfully there. [Antidotes to special poisons are considered under their appropriate headings in the succeeding sections. At the close of the book will be found a condensed "List of Poisons and their Antidotes" for convenient reference and study.]

ANTIPYRETICS AND REFRIGERANTS.

ANTIPYRETICS.

Antipyretics are remedies which reduce the bodily temperature, some acting only against the preternatural heat of febrile conditions, whilst others can also cool down the natural warmth below the

In this country we are not much in the habit of regarding the temperature, *per se*, as a special element of danger, unless it goes beyond a certain height, and we, therefore, do not, as a rule, treat normal standard. We may thus divide their action :—

this symptom very energetically. Foreign experience seems to show that, although we may reduce the actual heat in acute disease, we do not necessarily alter the course of the attack, and we, therefore, usually confine our efforts to supporting our patient and looking out for complications. On the other hand, however, when the thermometer registers 105°, and still tends upwards, we are bound to interfere.

Class 1. Those which act by directly cooling the surface of the body by local application.

1. This is, undoubtedly, our most effectual antipyretic means, and may be carried out by cold affusion, wet pack, or, best of all, by the carefully graduated cold bath.

Class 2. Those which act by internal administration, either lessening oxidation, or exerting some special influence on the nervous system.

2. This class consists of the antipyretic drugs, properly so called, such as quinine, digitalis, veratria, alcohol, salicylic acid, etc.; but, with the exception of the last-named, they are not much used for this purpose. It is a remarkable fact, that very few, if any, of these drugs have the power of reducing the normal temperature, save when given in large and almost poisonous doses (*vide* Alcohol, Quinine, etc.).

Class 3. Those which act by dilating the superficial vessels and enabling a larger sheet of blood to be spread over the cutaneous surface, and thus brought in contact with the cooling influence of

3. Under this heading we must include the whole class of diaphoretics, as well as chloral hydrate, the warm and Turkish bath, etc.

the air. The chilling effect then produced by the return of the circulating fluid to the heated centres, although very transient, may become considerable by repetition.

Class 4. Remedies which act by bracing up and strengthening the nervous system, and removing some of that enfeebled and semi-paralyzed condition on which febrile temperatures have been supposed to depend. Those who, like Liebermeister, adopt the antipyretic plan in its entirety, combine the various agents. Whilst using very frequent baths, as often as every two hours—in severe cases two hundred, even, having been given during one illness—he orders quinine in large doses, holding it first among cooling agents; digitalis where the heart is strong, thus reversing our usual therapeutical rules; and veratria, which seems to act by causing a kind of collapse. Statistics, however, do not show any superiority of this over the more expectant plan practised in England. Prof. Gairdner (*Glasgow Med. Journal*, September, 1878) well calls the German plan a battledore and shuttlecock treatment, consisting, as it does, "in keeping the patient, partly by means of cold baths, and partly by

4. A rising temperature being often an indication of debility, we may then check it by tonics, good food, small doses of alcohol, etc.

these other remedies, in a state of constant oscillation between fever and incipient collapse."

REFRIGERANTS.

Refrigerants, of course, necessarily include all remedies which actually lower the bodily temperature, but the conventionally accepted meaning of the term merely implies anything which alleviates thirst. Thus we find that the mere sipping of any fluid moistens the dry tongue and lessens the thirst of fever, whilst acids, by stimulating the secretion of saliva, may fulfil the same indication in a more scientific and effectual way.

ANTISEPTICS AND DISINFECTANTS.

Dr. Parkes proposed that the term disinfectant should be restricted to those substances which arrest the spread of specific disease depending on the entrance into the body of a special agent *ab externo*, and that agents acting in other ways should be called air purifiers and sewage deodorants. It would seem well, however, to adhere in these pages to the nomenclature most commonly in use in our received text-books of Materia Medica, and, whilst willingly conceding the palm of scientific precision to Professor Parkes, I shall adopt the following division of the subject into disinfectants and antiseptics.

Disinfectants are those substances which act by destroying offensive animal or vegetable effluences, arresting putrefaction, and stopping the spread of infectious and epidemic disease by destroying the particles on which the poison of these diseases is supposed to depend. How they do this is not matter of absolute certainty, but they act in many cases by direct chemical agency, by deoxidizing, or by taking up hydrogen and water; and the theory of the *modus operandi* of various substances here enumerated will be considered when each of them comes separately under review. Adopting, then, in some measure the nomenclature of Parkes, disinfectants may be divided into—

1. Air purifiers, which we may again subdivide into—

(1) Solid air purifiers, of which charcoal is the best, also dried earth, quick-lime, etc.

(2) Liquid air purifiers; Condy's fluid, zinc chloride, lead nitrate: and,

(3) Gaseous air purifiers; such as ozone, chlorine, iodine, bromine, nitrous acid, sulphurous acid, and carbolic acid.

2. We may next include the sewage deodorants, of which charcoal, dry earth (as in Moule's patent system), iron perchloride, quick-lime, potassic permanganate, carbolic acid (with the various powders, such as M'Dougal's and Calvert's, which are prepared from it), are the most prominent.

3. Finally we have what Dr. Parkes calls disinfectants proper, which arrest contagious disease by destroying the particles of matter which pass away from the bodies of the sick. Of these heat is a valuable member, it being now well known that a dry heat, as of an oven at over 212°, will completely disinfect clothing.

Chlorine is effectual, but irritating; nitrous acid vapor has been recommended, carbolic acid is of undoubted service, but sulphate of iron seems to be of very doubtful utility.

Professor Baxter limits the term disinfectants to "agents capable of so modifying the contagium of a communicable disease, during its transit from a sick to a healthy individual, as to deprive it of its specific power of infecting the latter."

Antiseptics are those substances which arrest the spread of disease and decomposition generally, not by chemical action, but by a poisonous effect on the septic microzymes on which these processes depend. It is, therefore, clear that they dovetail very essentially with the preceding group, more especially as it is difficult to draw a hard-and-fast line between those disinfectants which act chemically and those which arrest putrefaction and infective processes in other ways. The term antiseptic, therefore, is superfluous, and would probably have dropped altogether out of use had it not been for the term antiseptic surgery, which has been so extensively employed by Mr. Lister and his school, the theory being that putrefaction and pyæmia depend upon the presence of innumerable germs from which these substances free the air.

The principal are carbolic acid, zinc chloride, boracic acid, salicylic acid, sulphurous acid, corrosive sublimate, and perchloride of iron.

The term *parasiticide* has also been employed as indicating those substances which specially act as poisons to the minute animal or vegetable life, and are used medicinally with this view. Thus sulphurous acid and perchloride of mercury are used with success as local applications in various forms of parasitic skin disease, and sulphurous acid is beneficial in those cases of vomiting which depend on the irritation of low forms of cryptogamic vegetation imbedded in the mucous glands of the stomach.

[ASTRINGENTS AND CAUSTICS.

The property of astringency, or "puckering," is possessed by vegetable substances containing tannic acid and its derivatives; and, on the other hand, by many mineral salts. Astringents generally possess the power of coagulating albumen, but their therapeutic effect is rarely required to this extent; in less degree of strength they excite a tendency to condensation or contraction of living organisms, partly, but not mainly, by local influence upon the unstriped muscular fibres. In a higher degree they generally act as irritants, or even caustics. When used to check bleeding they are termed styptics. Astringents find their greatest field of usefulness in a relaxed condition of mucous surfaces with excessive follicular secretion. In cases of inflammation their tendency to exercise an irritant influence should not be lost sight of.

Extremes of temperature such as are obtained by either hot or cold applications will check hemorrhage; the cold acts as an astringent, but the heat more rapidly coagulates blood.

The vegetable astringents are tannic and gallic acids, and their allied forms, as kino-tannic and catechu-tannic and gallo-tannic. Acetic acid and weak solutions of carbolic acid also are decidedly astringent. It may be that the effect of chrysophanic acid in psoriasis is largely due to an astringent effect upon the vascular supply of the diseased skin.

The principal mineral astringents are sulphuric acid, and the soluble sulphates generally, particularly the ferrous and cupric sulphate; but the soluble compounds of zinc, silver, lead, copper, cadmium, and aluminum are generally astringent. The ferric salts with mineral acids, the ammonio-ferric sulphate, the calcic hydrate and carbonate, alum, subnitrate and subcarbonate of bismuth, and some of the volatile oils and resins are also to be included in the category.

Caustics are used to destroy tissues, and belong more particularly to surgery. When the application is mitigated or used in dilute solutions, the first effect of caustics, as a rule, is that of a stimulant and irritant, and they may exert an astringent effect. The principal agents used as caustics may be classified according to their action as follows:—

CAUSTICS.

PENETRATING.	CIRCUMSCRIBED.
Acetic acid.	Dried alum.
Bromine.	Dried zinc sulphate.
Chromic acid.	Heat.
Mercuric nitrate solution.	Potassa with lime.
Potassa.	Silver nitrate.
Sulphuric type-acids.	Zinc chloride.]

COUNTER-IRRITANTS.

The theory of the action of epispastics and rubefacients has given rise to much interesting physiological speculation, but we are not yet able to lay down, with absolute precision, the laws on which the beneficial action of these remedial agents depends. We know this much, however, that blisters may occasionally act locally on deeper-seated parts, as we are told that redness and inflammation of pleura and peritoneum may be produced by the vesicating influence of cantharides applied to the cutaneous surface superficial to these structures.

Then, again, vascular connection may explain other phenomena, and more especially may this be traced in the chest between the pericardial vessels and those of the skin immediately over the heart, and in the lumbar region between the superficial vascular supply and that which furnishes to the kidneys their due allowance of arterial blood.

These more direct and obvious explanations of various interesting therapeutical phenomena do not, however, lead us very far, and we are compelled to fall back upon much more abstruse considerations. Into these neither our space nor the scope of the present volume will permit us to enter very far, and we only very briefly draw a slight outline of those branches of the question which seem to have reached something of vigorous growth.

Now for the relief of pain, counter-irritation may act, 1st, by removing or modifying the structural condition on which the reflected suffering depends, as we often cure a facial neuralgia by extracting a carious tooth; or 2d, the end organs of the sensory nerves may be modified in molecular arrangement; or 3d, the trunks of the nerves themselves, or the nuclei or the nervous centres, may be altered in some unexplained way by the stimulus applied to the seat of pain.

For other purposes, also, counter-irritation may act by altering or re-distributing blood supply, as by actually emptying the deeper vessels and filling the more superficial arterioles at their expense; or special function or nutrition may be profoundly affected by influencing the trophic or other nerves which more especially preside over these departments of the economy.

The practical applications of counter-irritation in the treatment of disease are both numerous and interesting; and when considering iodine, mustard, and cantharides, we will devote some space to the consideration of the principles which should guide us to their successful use.

DIAPHORETICS.

This class of remedies has the property of increasing the secretions of the skin, and is usually divided into (1) the stimulating and (2) the sedative. Under the first heading we include those drugs which stimulate the cutaneous circulation, among the principal of which are ammonia, alcohol, the cold bath, phosphorus, etc.; and, secondly, we speak of the sedative class, which act by dilating the superficial vessels, these being ipecacuanha, tartar emetic, jaborandi, aconite, the warm bath, and all the nauseating and emetic substances, the depressing action of which is invariably attended by free

Diaphoretics are used freely in practice at the outset of acute diseases, to relax the contracted vessels and relieve the hot, dry skin, and in pneumonia this line of treatment has produced good results. The sedative class would seem to be best adapted for this purpose; but the cold bath, which more naturally belongs to No. 1, has been freely used abroad in febrile disorders, and part of its beneficial effects must no doubt be due to its action on the skin.

In eruptive fevers, when the eruption is not sufficiently developed, we endeavor to excite the function of the skin, and thus favor the local perspiration. Then again we must refer to what are known as adjuvant remedies, such as warmth to the surface, diluent drinks, etc.

manifestation of the poison, by warm baths, wet-packing, and possibly by phosphorus. We also use diaphoretics to favor absorption, as in various dropsies, and to relieve the kidneys, between which and the skin so much sympathy exists.

They are also of service by assisting to eliminate morbid products from the blood. When the various internal organs, whose duty it is to get rid of certain effete and hurtful matters, are temporarily or permanently off work, we may hope to supply their place in some measure by the skin, and in Bright's disease we may thus relieve the system of some urea; in jaundice, of biliary products, etc.

DIURETICS.

Diuretics stimulate and increase the flow of watery fluid through the kidneys in various ways, which we may conveniently classify under the following headings :—

Class 1. Stimulating diuretics, which act by directly exciting or irritating the glandular secreting structures of the kidney.

1. These are cantharides, turpentine, colchicum, etc., but they are rarely thus used, as they are liable to produce pain, strangury, and even hemorrhage. Cantharides has, however, been recommended in some forms of chronic albuminuria and in pyelitis.

Class 2. Those drugs which stimulate the circulation,

2. The principal of these are digitalis, belladonna,

causing increased arterial tension, and thus greater pressure on the walls of the Malpighian bodies, by which means transudation of watery fluid is mechanically favored.

Class 3. We next come to the saline diuretics, which, in addition to some slightly stimulating influence, have a special power of absorbing and holding watery fluids, which they then carry with them in their exit from the body.

Class 4. Mechanical diuretics must next be included in the list, and among the principal of these we may mention water, which acts by washing the urinary tubules clear from epithelium or casts, which block them under certain conditions, and so allowing secretion to be re-established. Under this heading we may also group those remedial means which act indirectly by relieving the kidneys in various ways. Thus, when congestion is present, local bleeding, dry cupping, warm fomentation, etc., may be the best diuretics. When the kidneys are pressed upon by ascitic fluid, a renewal of their full function frequently follows the operation of tapping, and in many cases we may give these organs temporary rest by handing some part of their duties over to the skin or the bowels.

squill, and ergot; and they are of service in various dropsies, and perhaps most especially in those which depend on disease of the heart.

3. In this group we include the lithia, potash, and soda salts, and most of them possess a double action, being diuretic in small, and purgative in large doses. They are also used with advantage in anasarca and dropsical accumulations.

4. Dr. Dickinson has shown how well copious draughts of water act in the acute desquamative nephritis of children, on the mere mechanical principle of sluicing or washing out the obstructed tubules. The indirect diuretics are often of most service in renal disease; but Christison, Gairdner, and other experienced authorities have always upheld the benefits to be derived by the treatment of Bright's disease in all its stages by the less stimulating forms of diuretics.

Diuretics are notoriously uncertain remedies, and many of them have not the slightest power of increasing the flow of urinary water during health. They also vary much in their power of promoting the elimination of urea and other products of excretion by the kidneys. They may be given either by the mouth or by vapor (in which way oil of juniper acts well); or, as in the case of digitalis, they may be efficiently used by cutaneous absorption. In their administration we must observe the following rules: Give them freely diluted, and, as a rule, combined one with another, as several remedies of the class seem to act better than one, as in the famous Guy's pill. Keep the patient cool, so as to avoid any action on the skin, and endeavor to prevent the bowels from coming too freely into play.

EMETICS.

The object of an emetic is to stimulate the so-called vomiting centre in the medulla oblongata, close to the origin of the pneumogastric nerve, and induce it to call forth the complicated series of muscular acts which terminates in evacaution of the stomach. Emetics act in two ways, and are thus classed, as:—

Direct.	*Indirect.*
Where the drug irritates the filaments of the pneumogastric nerve distributed to the mucous membrane of the stomach, and this irritation, being transmitted to the centre, is reflected in motor impulses through the pneumogastric, phrenic, and intercostal nerves. The direct emetics are prompt in their action, and cause little nausea and depression; and the principal members are zinc sulphate, copper sulphate, ammonium carbonate, mustard, common salt, etc.	Emetics of this class are conveyed directly by the medium of the blood to the vomiting centre, and act well by injection without coming into contact with the stomach. They are less prompt and more depressing than those of the other class. Principal members: Ipecacuanha, emetia, tartarized antimony, apomorphia, veratria, and delphinia.

The reflex chain then being established by which the muscular apparatus causes vomiting, we must next consider the various steps of the process.

Physiology of Vomiting.	*Therapeutics.*
1. In the first place the cardiac sphincter must be relaxed, or no vomiting can take place, and the persistent contraction of this structure may account for many cases of distressing retching. 2. The actual contraction of the walls of the stomach itself, must be supplemented by that of the abdominal parietes. 3. The diaphragm descends and becomes fixed, so that the various muscles compressing the stomach act between two fixed points. 4. The glottis is closed. 5. As vomiting cannot be effectually accomplished if the stomach is quite empty, under these circumstances the patient generally swallows a certain quantity of air, so as to distend the viscus.	Emetics are used to empty the stomach in cases of poisoning, and here we invariably employ the direct class, such as the zinc sulphate, mustard, salt, etc. They are also of service in some forms of dyspepsia, and to clear the stomach in intoxication, and for the relief of the convulsions of infancy, which often depend on irritating articles of diet. [Where the direct emetics are contra-indicated, we may resort to the indirect, which act by absorption. Emetia and apomorphia will cause vomiting if injected hypodermically.]
1. *Action on the Brain and Nervous System.*—Emetics may cause some congestion of the brain by the obstructed venous return from the neck during the act of vomiting.	1. We must therefore avoid their use in apoplectic cases.
2. *Circulation and Respiration.*—They have a sedative action on the heart. As the respiratory is close	2. Emetics are of great service in clearing the lungs in bronchitis, and in getting rid of the false membrane

to the vomiting centre, the breathing generally becomes sighing and irregular during the act of vomiting; but in addition to this there is an increase of secretion from the pulmonary mucous membrane, and the compression of the lungs forces retained mucus out of the bronchial tubes.

in croup and diphtheria, and they may thus be said to act as expectorants. We had here best use such emetics as ipecacuanha and tartarized antimony, which combine an expectorant action.

3. *Organs of Secretion.*—By the pressure exerted on the intestines, some slight purgative action may result, and prolonged vomiting always leads to the discharge of bile from the stomach by the mechanical squeezing of the liver and gall-bladder. Emetics invariably cause free perspiration during their action, as well as an increased flow of saliva.

3. Emetics may therefore be said to act as cholagogues, and may be of great service in stimulating the action of the liver, and removing inspissated secretions from the gall-bladder. Some authorities hold that it is good practice to give an emetic as early as possible at the outset of fevers, such as enteric; and it has been suggested that the fever poison is retained at this stage in the bile, and may be expelled along with it from the system.

EMMENAGOGUES AND ECBOLICS.

Of these we may consider, first,

ECBOLICS.

Physiological Action.

Ecbolics are substances which cause such violent contraction of the pregnant uterus as to effect the expulsion of its contents. It is not quite certain whether the principal members of the group act specially on the

Therapeutical Action.

Ecbolics are used extensively in obstetric practice when it becomes necessary to stimulate the flagging powers of an exhausted uterus—the principal being ergot, digitalis, savin, borax, quinine. We are also compelled, under

muscular structures of the organ, or whether a primary intervention of nervous influence through the spinal cord is necessary.	certain circumstances, to have recourse to the induction of premature labor, as when dangerous sickness goes on unchecked, or when weakened abdominal or thoracic viscera are injuriously compressed by the pregnant uterus. In such cases, however, it is generally found best to use mechanical means.

EMMENAGOGUES.

May be direct or indirect.

Physiological Action.	*Therapeutical Action.*
Direct emmenagogues act merely by restoring the normal functions of the uterus when these are suspended.	Most of the ecbolic drugs act as emmenagogues when given in small doses to a non-pregnant patient, and to the list we may add rue and castor. Of all these, however, ergot is by far the most effectual.
Indirect emmenagogues act by removing some constitutional condition which interferes with the due performance of the uterine functions. Thus amenorrhœa very frequently depends on anæmia, or constipation may require removal before our more special remedies will act.	The different preparations of iron, in combination with aloetic or other purgatives, act well, and we may aid our chances of success by all hygienic means, as well as by warm hip-baths, leeches, and mustard stupes, at the normal menstrual periods.

EXPECTORANTS.

These are remedies which facilitate in various ways the expulsion of secretion from the bronchial tubes. They may thus be divided:—

1. The emetic class, which are the most efficient of all,	1. There can be no doubt that, when the lungs are

removing and softening the mucus, causing the transudation of watery fluids, and relaxing the muscular walls of the bronchial tubes.	choked with secretion, a good emetic often acts like a charm, as in bronchitis, whooping-cough, etc. We must here use the indirect emetic agents, as apomorphia, ipecacuanha, etc.
2. Nauseants may also be of service as expectorants.	2. These are merely the indirect emetic drugs given in small doses, as antimony, ipecacuanha, etc.
3. We then have what are called the stimulating expectorants, acting either on the general vascular system, or specially on the nervous and muscular structures of the lungs.	3. These are senega, ammonia, etc.; but it is evident that any tonic or stimulating remedy may frequently act indirectly as an expectorant, by improving the tone of the circulation, and giving the patient strength to cough and clear his lungs. The stimulating expectorants are more especially used in the later stages of pulmonary disease.
4. Those remedies which promote secretion from a dry and swollen mucous membrane.	4. In the earlier stages of bronchitis much discomfort occurs from the dry hard cough and difficulty of breathing arising from swelling of the bronchial mucous lining. Great relief is experienced when free expectoration is established, and this may be promoted by inhalation of steam, liq. ammonii acet., lobelia, and the class of nauseants generally.
5. Expectoration is often rendered difficult by tenacity of the mucus, which is coughed up, only after much straining and effort, and great relief follows every drug which	5. We find that alkalies act well here, and, if any gouty tendency exists, more especially potassium iodide,

can thin or liquefy the secretion.	
6. Spasmodic contraction of the smaller bronchial tubes may interfere with free expectoration.	6. Here we may hope to obtain relief by the use of opium, belladonna, stramonium, tobacco, etc.

NARCOTICS AND ANODYNES.

Narcotics, as the name implies, are those remedies which cause sleep, and they do so by imitating the normal physiological arrangement of that condition, and producing an anæmic state of the cerebral hemispheres. Why they act in this selective way on the brain is not very clear; for although opium contracts the bloodvessels, thus arresting nearly all secretion, chloral has a dilating effect, and pot. bromid. has not been proved to have any special action on the circulation at all. Bernard's theory of independent vascular areas acted on by special drugs only removes the difficulty further back, as, of course, we are totally unable to explain why one drug affects one region or function, and a different one another. But whatever the explanation may be, we all gratefully acknowledge the enormous benefits derived from the control over the reparative process of sleep these remedies afford us, and a reasonable mode of division seems to be into—1st, direct narcotics; 2d, indirect narcotics.

1. Direct Narcotics.

Physiological.	*Therapeutical.*
These are the following drugs, named in their order of potency, as opium, chloral hydrate, potassium bromide, hyoscyamus, belladonna, hop, and Indian hemp. The peculiar action of chloral, however, occasionally causes its failure in cases of debility, where it acts by increasing the natural tendency of the relaxed arteries to dilate, thus	Opium is, beyond doubt, the most potent and certain, and, perhaps, least dangerous narcotic; but the digestive disturbance unhappily following its use often interferes with its continued administration. It is, no doubt, best adapted of all the remedies of this class for use in fevers and in all painful conditions, on account of its anodyne pro-

flushing the brain with blood during recumbency, effectually preventing sleep.

perties. Chloral is more to be recommended in simple insomnia, in delirium tremens, and in all cases where we wish to keep up a prolonged narcotic effect, as it is not requisite, as a general rule, to increase the dose. Bromide of potassium is well adapted to soothe the system, when once excited by worry or over-work, and the others are occasionally useful when success has not been attained by other means.

2. Indirect Narcotics.

Physiological.

First on this list we must place those drugs which secondarily affect the brain circulation by toning up the arteries, and thus regulating the supply of blood. Digitalis is here all important; and iron, also, has its place, by improving the quality of the blood. A little alcohol, given at the right time, will often produce sleep; and it is well known that the state of exhaustion produced by an empty stomach will often lead to prolonged wakefulness, only to be removed by a little food.

Darkness and quiet, and warmth, promote slumber, and the opposite condition of cold is well known to cause a comatose condition, too often

Therapeutical.

Digitalis often acts very efficiently, as a narcotic, by removing that relaxed condition of vessels which substitutes congestion for anæmia, when the patient lies down; a little alcohol at bed-time, more especially for the aged, is an excellent "night cap," and when we find weakly persons complaining of want of sleep, we will do well to order a cup of milk or a little beef-tea, or other simple nourishment, to be taken at bedtime, or placed by the bedside for use in the early morning hours, when the power of life begins to flag.

Suitable bed-room arrangements are very important, as some persons are at once awakened by the faintest ray of light. Some like a hard

ending in death. Sleep, again, is promoted by the removal of everything which excites the patient.	bed, others, a soft; according to their personal habits.
Thus, hyoscyamus or conia, or atropia, by stilling the wild ravings of mania, may be truly narcotic, and remedies of the next class are often effective members of the major group, by lulling or removing pain, which made sleep impossible.	These drugs have done good service in asylum practice.

Anodynes.

Physiological.	*Therapeutical.*
Anodynes act by lulling pain, probably by interfering with the conducting power of sensory nerves. Opium possesses this power, which is absent in chloral, and then we have aconite, belladonna, chloroform, compound spirits of æther, etc., which may soothe locally, as well as constitutionally.	Of all anodynes opium is the best, and more especially morphia by subcutaneous injection, which rarely fails to lessen, and often speedily removes pain; chloral only removes pain during sleep, but curare is probably a true sedative. Local application of anodynes is only serviceable in acute inflammation, neuralgia, rheumatism.

PURGATIVES.

Purgatives may be divided, first, into two classes depending on their origin, and these are:—

1. The inorganic substances, comprising chiefly the mercurials and salines.
2. Those derived from the vegetable kingdom, and which depend for their therapeutical action on the presence of resins or oils.

Their actual modes of operation, however, are much more varied, and they will best be considered by division under various headings, according to their physiological and therapeutical properties.

1. *Laxatives.*—These substances act by causing a slight increase in the peristaltic movement of the intestines, with softening of the feces, which are then expelled in a solid and formed condition.	1. The principal of these are sulphur, castor-oil, magnesia, etc.; but in addition to actual drugs we may include various articles of diet, as oatmeal, brown bread, whole flour, figs, prunes, etc., which act purely mechanically. Laxatives are useful whenever we desire a mild and unirritating effect, as in simple constipation from dyspepsia, pregnancy, or convalescence from acute diseases, sedentary habit, and other causes. Castor-oil acts well in the early stages of diarrhœa, by sweeping away the irritating cause.
2. *Purgatives* produce more decided effects both in stimulating movement and secretion; but it is difficult to separate them entirely from either class No. 1 or No. 3.	2. Rhubarb, senna, aloes, and jalap are reckoned among the chief of these, and they are used in various dyspeptic conditions, rhubarb being more especially stomachic, and aloes emmenagogue, in its properties.
3. *Drastic Purgatives.*—These run by insensible gradations into the preceding class. Their action depends on an irritation of the mucous membrane of the intestines, and not only an actual increase of secretion from their glands, but the withdrawal of watery fluids from the blood. An overdose, therefore, may be attended by serious depression, discomfort, and even by death from inflammation of the bowel.	3. In this class we include jalap, scammony, colocynth, gamboge, and croton oil, and they are principally used either in obstinate constipation, or to produce a derivative or species of counter-irritant effect in various forms of brain disease.

4. *Hydragogue purgatives* cause very free secretion from the mucous membrane of the bowels, and empty the veins by withdrawing fluids from the blood.

4. These are elaterium, cream of tartar, etc., and they are most useful in ascites and other dropsical conditions, and for the relief of a feeble and laboring heart by diminishing the actual volume of the blood.

5. *Saline Purgatives.*—We shall, when treating of magnesium sulphate (Epsom salt), consider the action of this class, and point out how, from their low diffusive power, they pass with difficulty into the blood, and how, whilst in the intestine, they not only absorb, retain, and carry away the watery fluids which they find in the intestine, but also directly withdraw fresh supplies from the blood itself.

5. Sulphate of magnesia and many of the salts of potash and soda must here be included. They are best given in a state of free dilution, and make very efficient habitual purgatives, more especially in the form of various natural purgative waters, such as Friedrichshall, Pullna, and Congress water.

6. *Cholagogue Purgatives.*—Much experiment has recently been expended on the action of this class, and those recently conducted on improved principles by Prof. Rutherford have given us very precise and reliable indications for practice. Cholagogues have been held to act either by directly stimulating the secretion of bile, or by increasing the efficiency of the bile-expelling mechanism; and as the elaborate important experiments of Rutherford have only reference to the first action, he prefers to use the term hepatic stimulant, although any

6. The principal members of this group are mercury, podophyllin, rhubarb, aloes, jalap, mercuric chloride, colchicin, euonymin, iridin, sanguinarin, ipecacuan, colocynth, sodium sulphate, sodium salicylate. They are used for the relief of various functional affections of the liver, to remove what is commonly known as "biliousness," and to obviate portal congestion.

explanation of the action of this class of remedies must be almost purely conjectural. Rutherford believes that the effect is due to "a direct action of their molecules upon the hepatic cells or their nerves."

It is interesting to observe, as noted by Rutherford: *a.* "That when a substance produces purgation, but does not stimulate the liver, it diminishes the secretion of bile. *b.* That when a substance stimulates the liver as well as the intestinal glands, a moderate dose increases both the hepatic and the intestinal secretion, the effect on the former being more marked in the earlier part of the experiment, and diminishing as the purgative effect increases, but an excessive dose by producing a violent purgative effect early in the experiment, may occasion nothing but diminished secretion of bile."

In addition to drugs belonging to the actual purgative class, we have many indirect remedies which act with considerable efficiency. Thus we may use enemata, cold to the abdomen, mechanical kneading of the parietes, or electricity, in order to stimulate the muscular tissues to contraction; or we may cause a purgative action by relieving spasm.

Among the stimulating class we may mention strychnia, nux vomica, ergot, and the ferrous sulphate, and these are very efficient, in combination with mild purgatives, where constipation depends on a lax or weakened state of the intestinal walls.

When spasm or irregular contraction prevents free action of the bowels, we must have recourse to opium, belladonna, or the lead acetate, which, under these conditions, may be looked upon as true cathartics.

In administering purgatives, we must consider the various parts of the intestinal canal on which they act. Thus senna, jalap, etc., act on the small intestine, aloes on the large, podophyllin on the duodenum, etc. We must also consider the time of their administration, as we find that the slowly acting resinoid substances are best given at night or before dinner, whereas the salines are best taken on an empty stomach, and more especially before breakfast. The mode of administration is also worthy of note, the resinoids being best taken in the form of pill, whereas the salines act best in solution with free dilution and in combination with bitters, iron, or sulphuric acid.

STIMULANTS AND SEDATIVES.

Stimulants and sedatives are so directly antagonistic in nature that the most satisfactory scheme of their action will be presented by direct contrast in parallel columns, according to the plan adopted generally throughout these pages.

I. *General Stimulants.*

As the principal members of this group we may mention alcohol, opium, and the anæsthetic vapors, which, whilst stimulant in small, are narcotic in large doses; the ethers and ammonia, which are called diffusible because rapid elimination prevents any marked display of their stupefying qualities. We may refer to the article on alcohol for directions as to the use of stimulants in health and disease. Then

I. *General Sedatives.*

The stimulating drugs in the opposite column, when carried beyond a certain point, cause a sedative or soothing action, and run by insensible degrees into the truly narcotic class of remedies. Over-stimulation produces exhaustion and indirectly a sedative action.

again, the cold douche, counter-irritation, and electricity may act as powerful stimulating agents under certain conditions.

II. *Special Stimulants.*

1. *To the nervous system.* Alcohol, ether, and opium undoubtedly stimulate the brain, causing greater intellectual activity and an increased flow of ideas, occasionally somewhat irregular in form. Phosphorus may be ranked under this heading, and digitalis may improve the functions of the cerebral hemispheres by the more regular supply of blood which its tonic influence on the arterial system provides.

The spinal cord is directly and powerfully stimulated by strychnia, and in the lower animals by morphia; whilst ergot and belladonna, by contracting its vessels, may help in removing various conditions of debility. Certain nervous centres are stimulated by certain drugs. Thus, atropia stimulates the respiratory centre, the indirect emetics stimulate the vomiting centre, strychnia the vasomotor centre, etc. The ear-ringing property of quinine is probably due to an irritative action on the auditory nerve, digitalis stimulates the vagus, whilst jaborandi and

II. *Special Sedatives.*

1. *Nervous system.* The best sedatives to the brain are undoubtedly those drugs which diminish its blood supply and so cause sleep. Conium is held to exert a specially sedative effect on the great motor ganglia.

The principal spinal sedatives are Calabar bean, bromide of potassium, chloral, methyl conia, and gelseminum, which powerfully depress the reflex functions of the cord,

The respiratory centre is depressed by chloral hydrate, hydrocyanic acid, amyl nitrite, aconite, opium, etc.

An interesting selective action of a sedative or paralyzing nature is exerted by the following drugs on the following nerves. Atropia paralyzes the intra-cardiac inhibitory apparatus and the terminal fibres supplied by the third nerve to the iris. Conium paralyzes the third muscarin confine that action to the intra-cardiac inhibitory apparatus. The sialagogue action of jaborandi is believed to be due to a stimulation of the periphery of the salivary nerves.

2. *Cardiac and Vascular Stimulants.* The general stimulants already enumerated undoubtedly stimulate the heart, and the class of drugs of which digitalis is the type have been already considered under cardiac tonics. Opium is decidedly a vascular stimulant.

3. *Digestive and Secretory Stimulants.* The stomach may be stimulated by ginger, capsicum, pepper, and the like; whilst cholagogues, diuretics, purgatives, and diaphoretics may be held to stimulate the liver, kidneys, intestines, and skin, by promoting or exciting their respective functions.

nerve, gelseminum the sixth, and croton chloral the fifth. Atropia also exerts an inhibiting influence upon the secretory nerves of the submaxillary gland, etc.

2. *Cardiac Sedatives.* The principal cardiac sedatives or depressants are aconite, veratrum viride, tobacco, colchicum, chloral, chloroform, and potassium nitrate.

3. *Digestive and Secretory Sedatives.* A sedative action on the stomach may be produced by hydrocyanic acid, bismuth, and alkalies, generally in small doses.

TONICS.

The word tonic is undoubtedly vague from the strictly scientific stand-point, but we may congratulate ourselves that zeal for more precise nomenclature has not yet succeeded in depriving us of a term which has now included so many associations of an empirical kind. The best example of tone probably is the gentle and permanent contraction of the muscular tissue, which is kept up in the healthy body by the central nervous system, and which, when suspended by disease, is familiar to us all in the flaccid and powerless limb of paralysis, and an appropriate remedy is found in electricity, which improves the nutrition and status of the part. We have vascular tone also, in which the due calibre of the arteries is regulated by the action of the vaso-motor nerves, and were we asked to name two tonic remedies which reinforce these important functions, we might unhesitatingly point to strychnia, which aids the nervous tone, and digitalis, which raises the arterial tension by stimulating the vaso-motor centre. But treating our heading in a more general sense, we are justified in calling anything a tonic which improves the general health, and thus an emetic, or a purgative, or a narcotic, or a sedative, may really have tonic properties by removing obstruction or irritation and giving rest to fatigued or worn-out organs. The best of all tonics, after all, are those which cannot well be included in any therapeutical tables; for what can equal the bracing properties of sea-bathing, of change of air and scene, of the keen whiff of exhilarating ozone on a Swiss glacier or a Scotch moor, of a day's hunting or shooting, or a ramble along a good trout stream when fish are well on the take? A good dinner, with a glass of good wine, cheerful society, the stimulus of hope, even the rousing effect of a sudden reverse of fortune, may be often more successful than mere drugs; but in considering the varying modes of treatment for debility in its many forms, we may usefully divide our therapeutic resources in the following way:—

I. Nervine Tonics.

Physiological.	*Therapeutical.*
1. First among these we may rank agents acting directly on the brain, reducing its blood supply and giving it rest.	1. Under certain conditions of mental excitement or worry or debility, no tonic can be so good as a sound night's rest, and the narcotic class of remedies act well by supplying this.
2. Then again, certain drugs act on special centres; thus, strychnia and digitalis stimulate the vaso-motor centre, atropia the respiratory centre; and strychnia stimulates the spinal cord.	2. Strychnia and nux vomica are of great service by aiding the circulation through the vaso-motor centre, and helping the spinal cord to resume its full functions when it is weakened by any debilitating cause. The nervine tonics are used not only in
Finally, we have those substances generally known	

under the somewhat vague title of nervine tonics. These are principally metals, such as arsenic, phosphorus, zinc oxide, and zinc sulphate; but quinine and ammonium chloride have also good right to be included in the list.	simple debility, but in special conditions of nervous weakness. Thus quinine, arsenic, and even ammonium chloride are of service in neuralgia, probably by giving increased tone to sensory nerves; the zinc salts are useful in the irregular muscular contractions of chorea, and in the loss of the presiding nervous control which characterizes hysteria.

II. Vascular Tonics.

This class of remedies may act in three different ways.	
1. On the heart itself, bracing up and improving the condition of tone of its muscular fibre and slowing its action so as to give it increased rest. Digitalis stands first on the list.	1. We see the great benefit of this division more especially in heart disease, where the pulse is feeble and irregular, and in functional derangement of cardiac action from feebleness of the muscular structures of the heart.
2. Those which act more particularly on the vessels, raising arterial tension by contracting the muscular tissue of which their walls are largely composed. Here again digitalis comes into play, but we also have ergot, belladonna, etc. etc.	2. These also act well in improving the general tone of local circulation, bracing up the vessels, and removing œdema and passive congestion.
3. Those which act directly on the blood, increasing the number of red corpuscles and the amount of hæmoglobin which they contain. Iron, phosphorus, arsenic, and cod-liver oil have been proved, by careful investigations and	3. In anæmia, where the blood is poor in red corpuscles and hæmoglobin, in chlorosis, in the debility following loss of blood, etc. etc., these hæmatinic remedies, as they have been called, are of essential service, whilst in

by direct measurement, to have this property [which has also been shown by Keyes to belong to mercuric bichloride in small doses].

neuralgia they act well by giving the enfeebled sensory nerves the healthy stimulus of better blood.

III. Digestive Tonics.

Of the importance of this division there can be no doubt, when we consider that life itself, as well as sound health, depend on the consumption and due assimilation of a well-arranged dietary. Bitters are generally looked upon as the type of tonics, and there is no doubt that they increase the feeling of appetite and augment the secretion of saliva, and possibly that of the gastric juice. Then, again, the best tonic to an irritable stomach may be remedies such as bismuth and hydrocyanic acid, which calm and soothe, and enable the mucous membrane to resume its function. Gentle purgatives may also act as tonics, and acids and alkalies, which both check inordinate acid secretion and encourage its flow.

In general debility and feebleness, convalescence from acute illness, and want of tone, we know how much more hopeful we become when our patient is able to relish and digest his food, and we also know how great is the aid given by small doses of alcohol with the meals, in helping the weak stomach to do its work. For irritable dyspepsia, with a red tongue, the ordinary tonics only do harm, and when the tongue is foul and loaded, a mild course of purgatives will remove unhealthy mucus and enable digestion to be satisfactorily accomplished.

[SUMMARY OF THE ACTION OF THERAPEUTIC AGENTS.

Remedies may be used with a therapeutic effect for the purpose of favorably modifying:—

- Environment (Antiseptics, and hygienic measures).
- Nutrition
  - Food.
  - Appetite.
  - Digestion.
  - Absorption.
  - Secretion.
  - Blood-crasis.
  - Respiration.
  - Bodily heat.
  - Organic status.
- Innervation
  - Sensation (general and special).
  - Motility.
  - Condition of nervous structure.
- Circulation
  - Action of heart
    - Stimulant.
    - Sedative.
  - Arterial contraction.
  - Volume of blood.
- Functional activity (specifically).
  - Stomach.
  - Liver.
  - Kidneys.
  - Heart.
  - Lungs.
  - Nervous structures, etc.
    - Vomiting.
    - Purging.
    - Counter-irritation, etc.

They also indirectly influence development, and in an unknown manner act upon certain morbid states, as cinchona in malaria, and mercury in syphilitic dyscrasia.

The following classification (especially that of Dr. H. C. Wood) will probably be found to be as useful as any that has been offered:—

CLINICO-PHYSIOLOGICAL CLASSIFICATION OF DRUGS.[1]

I. Local, or Non-systemic Remedies.
    Anthelmintics.
    Chemical antidotes.
    Disinfectants { Absorbing. Antizymotic. Dehydrating. Oxidizing.
    Stomachics { Antacids. Carminatives. Digestants.

II. Substances which act on the solids and fluids of the body.
  a. Systemic Remedies.
    Class I. Astringents.
    II. Tonics.
    III. Cardiac stimulants.
    IV. Cardiac sedatives.
    V. Antispasmodics. { Nervines.
    VI. Analgesics. { Anodynes.
    VII. Mydriatics. { Hypnotics.
    VIII. Anæsthetics.
    IX. Excito-motors. { Special stimulants
    X. Depresso-motors. { and sedatives.
    XI. Alteratives.

  b. Organic Remedies.
    Class I. Emetics.
    II. Cathartics.
    III. Diuretics.
    IV. Diaphoretics.
    V. Expectorants.
    VI. Emmenagogues.
    VII. Oxytocics.
    VIII. Sialagogues.
    Class IX. Errhines.
    X. Epispastics.
    XI. Rubefacients.
    XII. Escharotics.
    XIII. Demulcents.
    XIV. Emollients.
    XV. Diluents.
    XVI. Protectives.]

---

[1] [The student will find it a good practice to set down these headings on paper, and afterwards insert from memory as many as possible of the various drugs under their proper headings in accordance with the description of their effects given in the following pages. In discussing the remedies systematically in this work, it has been thought best not to follow any therapeutical classification, as none that have been offered are free from objection, and the advantages of an alphabetical arrangement for the convenience of reference are too obvious to demand discussion.]

REMEDIES

COMPRISED IN THE

PRIMARY LIST OF THE UNITED STATES PHARMACOPŒIA.

ABSINTHIUM—WORMWOOD.

[*The tops and leaves of Artemisia Absinthium, U. S.*]

Wormwood was formerly used as a bitter tonic and anthelmintic, but it has now quite disappeared from practice. Its prolonged use as a beverage, in the form of liquor, has been shown to produce a condition of enfeeblement and irritability of the nervous system, with a tendency to epileptiform convulsions.

[In combination with other herbs, it is occasionally used in domestic practice under the name of German Tea as a tonic; and in the form of infusion it is sometimes given for intestinal worms in children. Wormwood entered into the composition of the once famous "thieves' vinegar," *Vinaigre des quatre voleurs* (*Nysten, Dict. de Méd.*). The plant contains a volatile oil, which gives name and flavor to *absinthe.*]

ACACIA—GUM ARABIC.

[*A gummy exudation from Acacia vera and other species of Acacia, U. S.*

OFFICINAL PREPARATIONS, U. S.

Syrupus Acaciæ, used as a vehicle.
Mucilago Acaciæ, used as a vehicle.

Also enters into Mistura Amygdalæ, Mistura Cretæ, and Mistura Glycyrrhizæ Composita, and is used as an excipient and dusting-powder for pills.]

Gum is demulcent, and in the form of mucilage is much used for the suspension of bulky and insoluble powders, as well as to prevent the precipitation of the resin, which ensues when such substances as tincture of myrrh, tinct. cannabis Indicæ, etc., are added to water.

[Gum-Arabic water may be given as a demulcent drink in *fevers*, in *angina*, in *gastro-enteric inflammation*, and *dysentery*. It has some slight nutritive properties.]

[ACETUM—VINEGAR.

Impure dilute acetic acid prepared by fermentation, *U. S.*

OFFICINAL PREPARATIONS, U. S.

Acetum Destillatum (used in making Tinctura Opii Acetata).

EXTERNAL AND INTERNAL USES.

Vinegar, more or less diluted, is a favorite domestic application in *headache*, *sprains*, or *bruises*, and *sun-burn;* it is also used as a clyster against *ascarides*. It may be given as a refrigerant drink in *fevers;* and in these cases it is frequently applied to the surface of the body, with a sponge, as a means of reducing high temperature. In small amounts vinegar aids digestion, but in excess it is said to produce degeneration of the gastric tubules and fibroid thickening of the stomach. It is supposed to act on the blood by influencing its crasis, and reducing the proportion of fibrin. It has been found an efficient remedy in *scurvy*, in combination with nitre (℥j to Oj), of which an ounce may be given four times daily.]

ACIDUM ACETICUM—ACETIC ACID.

[*Acetic acid of specific gravity*, 1.047 *U. S.*

OFFICINAL PREPARATIONS, U. S.

Acidum Aceticum Dilutum (f℥ij in Oj). Dose fʒj–ij (4 to 8 gm.).

Also enters into Acetum Lobeliæ, Acetum Opii, Acetum Sanguinariæ, Acetum Scillæ (Syrupus Scillæ), Emplastrum Ammoniaci, Extractum Colchici Aceticum, Extractum

Ergotæ Fluidum, Liquor Ammonii Acetatis, Syrupus Allii, Potassii Acetas, and Zinci Acetas.

Symptoms of Poisoning.

Great heat and burning pain in the stomach, vomiting a sour liquid, purging, convulsions, coma, and death.

Mouth and fauces brownish, lingual papillæ swollen, sloughing of mucous membrane of pharynx, stomach livid or blackened, capillaries injected.

Antidotes.

In poisoning by acetic acid, alkalies or their carbonates may be given, properly diluted, and vomiting encouraged by large draughts of warm water containing milk or soap.]

External Action.

Strong, or glacial, acetic acid is a favorite and very successful application to *warty growths*, whether of venereal origin or not. The little tumor is touched several times with a glass rod, or brush, or a piece of wood, dipped in the acid, care being taken that none of the fluid trickles down over the neighboring structures. A few repetitions of this process will generally prove effectual. It is also topically used in some obstinate forms of *skin disease*, and more especially the varieties of tinea comprised under the term *ringworm*. The acid probably acts by directly attacking and destroying the parasitic growth on which the troublesome affections depend. Acetic acid is also occasionally applied to *corns*.

Internal Use.

Acetic acid is seldom used internally, although it forms an agreeable and effectual remedy for the checking of *night sweats*, and Graves used thus to prescribe it.

The varieties of acetic acid are: Acidum aceticum, from which are prepared acidum aceticum dilutum and oxymel, the doses being of acid. acet. dil. fʒj to fʒij (4 to 8 gm.), oxymel [Br.] fʒj to fʒij (4 to 8 gm.); and acidum aceticum glaciale. Then we have vinegar, the strength of which corresponds pretty accurately with the dilute acid, and which is purely a domestic remedy for headache, hysteria, and other allied conditions.

[(**St. John Long's Liniment.**) A favorite liniment is made as follows: to twelve fluidrachms of rose-water add four fluidrachms of acetic acid in a bottle, then in a graduated measure put three fluidounces of oil of turpentine, and forty minims oil of lemon. Rub the yelk of one egg in a mortar with two drachms of the acidulated rose-water to a smooth uniform mixture, which transfer to an eight-ounce bottle, and add to it three drachms of the oil mixture, shaking the mixture vigorously. In like manner alternate the remainder of the two, shaking well after each addition, until all has been added. This emulsion will stand for a long time without separating. (J. B. Moore, in *Proceed. Am. Pharm. Asso.*, 1881, p. 74.)]

[Aceta.

The officinal VINEGARS are:—

Acetum Destillatum.
“ Lobeliæ.
“ Opii.
Acetum Sanguinariæ.
“ Scillæ.]

ACIDUM ARSENIOSUM—ARSENIOUS ACID.

[*Sublimed arsenious acid in masses, U. S.* See ARSENIC.]

ACIDUM CARBOLICUM—CARBOLIC ACID.

[*Syn.*—Phenic acid. Phenylic alcohol.

A solid substance obtained from the products of the distillation of coal-tar, between the temperatures of 300° *and* 400°, *U. S.*

Dose, gtt. i–ij (.06 to .13 gm.), in pill or solution.

[ACIDUM CARBOLICUM IMPURUM.

Impure carbolic acid, U. S. (*Used only as an external remedy or for disinfecting purposes.*)

OFFICINAL PREPARATIONS, U. S.

Glyceritum Acidi Carbolici. (Acid ℥ij by weight, glycerin half a pint.) Dose, ♏v–x (=.30 to .65 gm.).

Unguentum Acidi Carbolici (ʒj to ℥j).

Suppositoria Acidi Carbolici (each gr. j).

Aqua Acidi Carbolici. (Glycerite of carbolic acid fʒx, water q. s. to Oj.)

POISONING.

In poisonous doses it causes burning and pain in the stomach, mucous vomiting, clammy, cool skin, difficult breathing, insensibility, contracted pupils, collapse, and death. Post-mortem examination discloses catarrh of the mucous membrane of the stomach, inflammation of the kidneys, dark and imperfectly coagulated blood.

ANTIDOTES.

Saccharate of calcium (may be extemporaneously prepared by adding calcium hydrate 1 pt. to sugar 3 pts.), calcium carbonate, and calcined magnesia in lime-water, are probably the best antidotes. Alkalies, soap, or the fixed oils may be given, with demulcent drinks, and the stomach evacuated with a pump or siphon, as the local effect of the acid will generally prevent emetics from acting. Atropia and cardiac stimulants are required to obviate the tendency to collapse. Nitrite of amyl might be cautiously inhaled; or an intravenous injection of diluted aqua ammoniæ administered.]

LOCAL ACTION.

Physiological Effects.	*Therapeutical.*
Carbolic acid is, in the first place, an antiseptic, from its power of destroying the minuter forms of animal and vegetable life.	It is therefore much used as an antiseptic and deodorant for the treatment of ill-smelling drains, etc., or to destroy the infectious properties of various secretions or discharges from the sick. It may also be useful as an injection or lotion to foul sores.
Carbolic acid is an irritating substance, and, if applied sufficiently long to the skin, will cause sloughing. It has, however, undoubted anæsthetic properties.	Although carbolic acid may be of use in correcting fetor, it is too irritating to make a good lotion for wounds or ulcers [unless properly diluted with oil (1 to 24) or water (ʒj to Oj), when it forms an efficient

dressing]. It has been used as a caustic in some ulcerative affections, as *lupus*. It has been recommended as a local anæsthetic during small operations, and to deaden the pain of some caustic applications. [The pain of opening a *felon* may be greatly reduced by previously immersing the finger for a few minutes in a 3 to 5 per cent. solution of carbolic acid.] It is a good application in tinea tonsurans, both destroying the microspores and preventing their development; but as re-development rapidly takes place, we must apply our remedy every six hours, and continue doing so for a fortnight after the apparent cure. A good formula being—

℞. Sulphuris præcipitat.,			
Zinci oxidi	āā ʒj ; or	4	Gm.
Olei olivæ	℥j ;	32	"
Acidi carbolici	gr. xvj.	1	06 "

M. To be rubbed in for a few minutes. (R. Lee.)

It is also readily absorbed through the skin, children being especially susceptible to its action, and idiosyncrasy here playing a prominent part.

We must therefore remember that symptoms of poisoning may readily be produced by the application of carbolic acid over any considerable cutaneous area, and that at least one death has been directly due to Listerian precautions.

Antiseptic System of Prof. Lister.

Its principal application, however, in surgery, is in

The acid itself, being extremely irritating, is preenabling us to carry out the far-famed antiseptic system of Prof. Lister.

This eminent surgeon, adopting the views of Pasteur, and believing that suppuration, pyæmia, and various other inconveniences connected with open wounds, arise from the irritation of minute germs contained in the air, has devised a process in which the atmospheric air, before reaching the raw surface, is filtered through carbolic acid and thus deprived of its irritating properties. vented from coming in contact with the wound or sore by a protection of oiled silk, over which are superposed several layers of gauze impregnated with paraffin 16 parts, resin 4 parts, and carbolic acid 1 part; and this dressing need not necessarily be changed oftener than every two or three days.

Mr. Lister prevents the access of air during operations by surrounding the part with an antiseptic atmosphere, composed of a sprayed watery solution of carbolic acid of 1 to 40, and the instruments and fingers of the surgeon are carefully washed with carbolized oil, whilst the arteries are tied with carbolized catgut ligatures, cut off short. By adopting these precautions, and attending most rigorously to the careful dressing of wounds, he has obtained excellent results, not only after ordinary operations, but in chronic abscesses wherever situated, compound fractures, and various diseased conditions connected with joints, whose cavities he is enabled to open and explore with perfect safety.

INTERNAL ACTION.

Carbolic acid, if administered in sufficient quantity, is very poisonous in its ope-

Carbolic acid has, in several reported cases, caused death by being drunk in ration, causing failure of the heart's action, hurried and embarrassed breathing from irritation, and then paralysis of the respiratory centre in the medulla oblongata, spinal convulsions, gastro-intestinal irritation, lowered temperature, and albuminuria. Its antiseptic properties sufficiently explain its internal use.

mistake for beer, or by being incautiously applied to the skin. The best antidotes are olive oil and saccharated lime.

It is occasionally given internally to counteract *flatulence* and *sarcinous vomiting;* but the sulpho-carbolates, and more especially that of soda, are the most convenient forms for its administration in doses of 15 to 30 grains. It has been used successfully as an inhalation in bronchitis and whooping-cough. [Carbolic acid has been recommended for *tænia*, in pill form, taking three to five grains in the course of the day.]

Absorption and Mode of Elimination.

Carbolic acid is rapidly absorbed, and quickly and entirely given off by the urine, to which it imparts a peculiar greenish-black hue and its own peculiar smell.

[ACIDUM CHROMICUM—CHROMIC ACID.

Potassii Bichromas. (See *Potassium.*)

Effects and Uses.

Chromic acid is an escharotic and antiseptic; it rapidly oxidizes organic matter and is the most energetic disinfectant known. A strong solution (gr. c. to f℥j) may be applied with a glass rod, to destroy *warts*, *condylomata*, and *excrescences*, or to reduce *enlarged tonsils*. Greatly diluted (gr. ss to f℥j) it forms a detergent wash for *mercurial stomatitis*, *scurvy*, *diphtheria*, *œdema of the glottis*, *ulcers*, and *phagedæna*. On account of the difficulty of limiting its effect it should not be applied in substance, as when used in this manner to destroy warts on the fingers, it has been known to eat into the joint and require amputation of a phalanx.]

[ACIDUM CITRICUM—CITRIC ACID.

OFFICINAL PREPARATIONS, U. S.

Syrupus Acidi Citrici (ʒj in Oj). Used as a vehicle.

Liquor Ferri Citratis, Liquor Magnesii Citratis, Liquor Potassii Citratis, Lithii Citras, Potassii Citras, and in preparing Ferri Pyrophosphas.

Dose, gr. xx–xxx (= 1.30 to 2. gms.).

EFFECTS AND USES.

As a refrigerant in fevers, citric acid solution is used in the form of lemonade, neutral mixture (liquor potassii citratis), or the citrates. It has been used in *scurvy*, *liver disease*, and *rheumatism*, and as an application to the throat in *diphtheria* (gr. viiss to f℥j). Dr. H. Bence Jones believes that lemon juice and citric acid increase the acidity of the urine; they consequently are contra-indicated in *lithuria*, and should not be given for a length of time, continuously, in the gouty diathesis.]

EXTERNAL USE.

Citric acid was proposed a few years ago as a soothing local application to cancerous sores.

INTERNAL USE.

Citric acid is used chiefly as a cheap and convenient substitute for lemon juice in effervescing draughts, which are very extensively prescribed on account of their cooling and refreshing properties in feverish conditions, and for the soothing influence of their carbonic acid when the stomach is irritable.

Whenever lemon juice can be procured, it should be used in preference; but at periods of the year when this fruit is out of season, citric acid will act well, and we here give a table from Squire, showing the proportions in which the acid and alkali should be prescribed to insure exact saturation.

17 grs. (1.12 gm.) of citric acid, or half a fluid ounce of fresh lemon juice	will neutralize	25 grs. (1.6 gm.)	bicarbonate of potassium.
		20 " (1.3 "	carbonate of potassium.
		20 " (1.3 "	bicarbonate of sodium.
		35 " (2.3 "	carbonate of sodium.
		15 " (1. "	carbonate of ammonium.
		13 " (.78 "	carbonate of magnesium.

Acidum tartaricum, being cheaper than citric acid, is often used to construct effervescing draughts.

[ACIDUM GALLICUM. *See* GALLA.]

ACIDUM HYDROCYANICUM DILUTUM—DILUTE HYDROCYANIC ACID.

[*A two per cent. solution in water of anhydrous Hydrocyanic acid, U. S. P.*

OFFICINAL PREPARATIONS, U. S.

Argenti Cyanidum.
Hydrargyri Cyanidum. } Not used internally.
Potassii Cyanidum, gr. $\frac{1}{10}$ to $\frac{1}{12}$ (.005 gm.).
Ferri Ferrocyanidum, ʒss (2 gm.).
Potassii Ferrocyanidum, gr. x–xv (1. gm.).

POISONING.

Prussic acid and the cyanide of potassium, in sufficient doses, are almost immediately fatal, so that in most cases no symptoms, except sudden collapse and death, are present. For a more detailed account of the effects, see page 105.

ANTIDOTES.

Chlorine or ammonia may be cautiously inhaled, accompanied by *cold affusions to the spine*, and artificial respiration. As a chemical antidote, sulphate of iron (gr. x), and tincture of the chloride of iron (fʒj), dissolved in a fluid ounce of water, may be given immediately, to be followed by twenty grains of carbonate of potassium, likewise in solution, forming with the poison insoluble *Prussian blue.* Atropia is stated to be a physiological antidote.

TESTS.

The peculiar bitter almond odor. A physiological test can be made by injecting some of the suspected fluid, hypodermically, into a rabbit, and observing its effects. When a little potassa is mixed with liquids containing this poison, and solution of the sulphate or sesquichloride of iron added, a grayish-green precipitate is thrown down—which deepens to a Prussian-blue tint on addition of a few drops of sulphuric acid. The nitrate of silver produces a white (*cyanide of* *silver*) precipitate; which, after being washed and dried, and then held on a watch-glass over a flame, burns with a fresh rose-color, cyanogen being at the same time evolved.

Sulphur Test.—Place two drops of a solution of hydrosulphate of ammonia, containing an excess of sulphur, in the centre of a watch-glass, and invert it accurately over the vessel containing the poisoned liquid. Remove the glass in three or four minutes, and dry the moistened spot gently over a spirit-lamp. Let a drop of water fall on the white film, and then a drop of the perchloride of iron. If prussic acid be present, a blood-red solution (sulpho-cyanide of iron) is produced; and this red color is discharged by the addition of one or two drops of a solution of corrosive sublimate.

When a mixture is to be examined, containing matters from the stomach, etc , if alkaline, it must first be neutralized by addition of sulphuric acid, then one-eighth part cautiously distilled therefrom into a receiver immersed in some frigorific mixture; and the product may then be tested by nitrate of silver, etc., as above.]

EXTERNAL ACTION.

Physiological.	*Therapeutical.*
Prussic acid applied to the skin in a concentrated form, may cause at first slight irritation, but secondarily diminishes its sensibility, acting in some degree as an anæsthetic, probably from a benumbing influence on the extremities of the sensory nerves.	It is therefore used externally, largely diluted, to relieve *neuralgic* pain and allay itching, more especially in skin disease. We may thus hope to alleviate the tormenting irritation often attending *prurigo* and *eczema;* but we must be careful never to let the lotion come in contact with any abrasion on the surface, as prussic acid is very readily and rapidly absorbed.

INTERNAL ACTION.

Hydrocyanic acid, being the most powerful and speedy poison with which we are acquainted, requires to be prescribed with very great caution.

Physiological.	*Therapeutical.*
1. *On the Nervous System.*—Prussic acid has some effect on the brain, causing giddiness and slight stupor; the respiratory centre in the medulla next becomes weakened, and the motor nerves are more or less paralyzed, causing excessive muscular feebleness.	1. It is used with great benefit in those forms of dyspepsia attended with epigastric pain and vomiting following food, and whether depending on gastric ulcer, or on mere irritation of the mucous membrane. It has also been given in *whooping-cough;* but in my experience its action is here very uncertain, and I have been unable to satisfy myself that it is a remedy of much value. In some forms of chronic and spasmodic cough it does good, but it is essentially in *dyspepsia* that we obtain real advantage from its use.
2. The *respiration* becomes slow and irregular, and finally ceases, death in cases of poisoning being generally due to suffocation. The sensory nerves are also enfeebled in their conducting power.	
3. Prussic acid has a powerful sedative action on the *heart*, the circulation becoming slow, feeble, and irregular under the influence of poisonous doses; and this arises both from an influence on the nerves and on the muscular structures of the heart itself.	3. It has been successfully employed in nervous palpitation [or irritable heart].
It also acts directly on the blood, combining with the hæmoglobin of the red corpuscles, and preventing them from properly fulfilling their	

duty of carrying oxygen to the tissues.

4. Prussic acid has no special influence on the *temperature* or on *secretion*, save that the saliva is generally increased in quantity.

Prussic acid is very rapidly eliminated from the system, probably by the breath, and half an hour may be sufficient for this purpose, so that in a case of poisoning we may have good hopes of recovery, if we can sustain the powers of life during this period.

Poisonous Effects.—In a large dose prussic acids kills immediately, the victim frequently uttering a loud cry, and expiring from cardiac syncope. If the quantity taken be smaller, symptoms of suffocation supervene from paralysis of the respiratory centre, and, if the process of poisoning be more gradual, from deficient supply of oxygen in the blood; other symptoms noted being convulsions, great muscular prostration, dilatation of pupils, and quick, feeble, irregular pulse. In fatal cases, *post-mortem* examination shows nothing characteristic.

If the poison be taken in a concentrated form, death may ensue very rapidly, in probably less than a minute; and Preyer, who has devoted special attention to the subject, has observed a guinea-pig to be apparently dead one second after inhaling some gaseous acid, all efforts at

Treatment. — Considering the great rapidity of the action of hydrocyanic acid, it is comparatively seldom that we have any opportunity of employing antidotes; but supposing we see a case sufficiently early to do so, we should have vigorous recourse to cold affusion and the inhalation of ammonia and chlorine water. Artificial respiration should be then steadily persisted in, and if we can thus counteract the tendency to death by suffocation, and tide the patient over the first half-hour, we may look forward to success, never despairing as long as the faintest pulsation can be felt in the heart. Secondary auxiliary means exist in the internal administration of ammonia, of chlorine water, or of carbonate of potash, followed by the mixed sulphates of iron, which convert the poison into Prussian blue; and recently the subcutanebreathing having finally ceased in fifteen seconds. He, therefore, considers this to be the most deadly mode of its administration; but no matter through which channel it enters the body, it speedily kills any animal, and, curiously enough, it is equally destructive to plants.

ous injection of atropia has been proposed as the true physiological antidote.

Dose and Mode of Administration.

One grain of anhydrous acid has caused death, and of this the preparation used in medicine contains 2 per cent., the old Scheele's, which is now obsolete, having contained 4 per cent.

In consideration of the rapid way in which the acid is thrown out of the system, we must repeat the dose frequently, from every hour to every three hours; and it is well not to order too large a quantity at one time, not because the acid tends to float on the top, as was formerly supposed, but because there is always a chance of an overdose being given through ignorance or carelessness. We may safely prescribe from 2 to 6 minims, beginning always with ♏ j, suspending it if the patient complains of any constriction about the throat. For external use fʒij may be dissolved in 8 ounces of water or rose-water.

℞.	Acidi hydrocyanici diluti	fʒij;	or	8	Gm.
	Glycerinæ	f℥j;	"	32	"
	Aquæ rosæ	q. s. ad f℥viij;	"	256	"

Misce, fiat lotio.
S. To be applied with a soft sponge.

In a case of troublesome itching.

R.	Acidi hydrocyanici diluti	♏ xij;	or		75 Gm.
	Misturæ amygdalæ	f℥vj	"	192	"

Misce, fiat mistura. Capiat cochlearia magna duo tussi admodum ingravescente.

For a case of irritable cough.

R.	Acidi hydrocyanici dil.	♏xxv;	or	1	60 Gm.
	Bismuthi subnitratis	ʒss;	"	2	"
	Syrupi aurantii	f℥j;	"	32	"
	Infusi gentianæ	q. s. ad f℥viij.	"	256	"

Misce. Capiat cochlearia magna duo ter in die ante cibum.

In a case of irritative dyspepsia.

Or, a few drops of prussic acid may be added to the ordinary effervescing draught with good effect.

[ACIDUM LACTICUM—LACTIC ACID.

OFFICINAL PREPARATION, U. S.

Ferri Lactas. Dose, gr. v (.30 gm.).

A syrupy, nearly transparent liquid, with slight odor and a very sour taste, obtained from sour milk. It has been found in the gastric juice, and may prove a useful addition to preparations of pepsin. It has been given in *dyspepsia* (dose fʒj), in sweetened water at meal-time. Locally it has been employed (diluted four-fifths) as an application to the false membrane in *croup* and *diphtheria.*

According to Prout *rheumatism* is connected with an excess of lactic acid in the blood; and this fact accounts for the benefit derived from the alkaline treatment.]

ACIDUM MURIATICUM—MURIATIC ACID.

[*An aqueous solution of hydrochloric acid gas, of the specific gravity* 1.160, *U. S.*

OFFICINAL PREPARATIONS, U. S.

Acidum Muriaticum Dilutum (℥iv to Oj). Dose, ♏x–xx (.60 to 1.20 gm.).

Also enters into the preparation of Acidum Hydrocyanicum Dilutum, Antimonii Oxidum, Calcii Phosphas Præcipitata, Carbo Animalis Purificatus, Quiniæ Sulphas, Strychnia, Sulphur Præcipitatum, and Acidum Nitromuriaticum, Aqua Chlorini, Barii Chloridum, Ferri Chloridum, Liquor Arsenici Chloridi, Liquor Calcii Chloridi, Liquor Ferri Chloridi, Liquor Zinci Chloridi, Morphiæ Murias, and Resina Podophylli.

POISONING.

Hydrochloric acid is a corrosive mineral poison. It causes a burning pain in the pharynx and epigastrium, strong styptic, acid taste in the mouth, much thirst, tense and frequent pulse, dry and hot skin, red glazed tongue, lips black. There is vomiting of blood and yellow matter, having the odor of the acid. Some of the vomit falling on a marble table causes foaming, from escape of carbonic acid gas. Cold sweats, delirium, and collapse terminate life. After death the parts in contact with the acid are stained and highly inflamed, and may be eroded. The vapor of ammonia produces a characteristic white cloud of ammonium chloride. Nitrate of silver throws down a white precipitate, which afterwards becomes black. Only the presence of a large excess of free acid can establish the proof of poisoning by it.

ANTIDOTES.

The same as for the other mineral acids: the alkalies and their carbonates, magnesia, soap, and bland drinks may be freely given. Muriatic acid stains the mouth and lips *black*, when taken undiluted.]

EXTERNAL USE.

Hydrochloric acid is a good form of application to *diphtheria* when it is used combined with equal parts of honey.

INTERNAL USE.

Of all the acids used in medicine, this has undoubtedly the most beneficial action in *dyspepsia*, on account probably of its forming one of the normal constituents of the gastric juice. In cases where we suspect the formation of an excessive quantity of this fluid, we may, on the principles already enunciated, limit its secretion by prescribing the acid immediately before meals. When the epigastric pain comes on immediately after eating, the condition is no doubt due to an irritable or perhaps ulcerated condition of the stomach itself, and we may best hope for success by carefully regulated diet and the use of bismuth, soda, or hydrocyanic acid. But when the pain does not set in with severity until from an hour to a couple of hours after food has been swallowed, the explanation probably is that an abnormal excess of gastric juice has been secreted, and a recurrence of this will best be checked by giving a little of the acid before meals.

Hydrochloric acid has also been much recommended by Dr. Chambers and others in *typhoid fever*, and it will generally be found that 20-minim doses of the dilute acid are very grateful to the patient, as quenching the thirst and moistening the tongue. Dr. George Johnson has recently taken exception to this, on the ground that the acid irritates the ulcerated surfaces of Peyer's patches; but not only does mere empirical experience demonstrate the harmlessness as well as the convenience of this mode of treatment, but it is quite evident that the contact of at least three alkaline secretions must considerably modify the reaction of the acid before it reaches the seat of disease, and prevent it from retaining much irritating power, and I should therefore look upon these views of Dr. Johnson as having little practical value.

DOSE.

In dyspepsia ♏xx ad xxx (1.30 to 2. gm.). In typhoid fever ♏xx (1.30 gm.) every two hours.

℞. Acidi muriatici dil.	♏xx; or	1	30 Gm.
Sp. chloroformi	♏xv; "	1	"
Infusi gentianæ	f℥j.	32	"

M. S. Ter in die.

In *dyspepsia.*

ACIDUM NITRICUM—NITRIC ACID.

[*Nitric acid of the specific gravity* 1.420, *U. S.*

OFFICINAL PREPARATIONS, U. S.

Acidum Nitricum Dilutum (f℥iij to Oj). Dose, ♏iv–xv (.25 to 1 gm.).

Also enters into Acidum Nitro-muriaticum, Argenti Nitras, Bismuthi Subnitras, Liquor Ferri Nitratis, Liquor Hydrargyri Nitratis, Spiritus Ætheris Nitrosi, Unguentum Hydrargyri Nitratis, and in the preparation of Acidum Phosphoricum Dilutum, Antimonii Oxidum, Bismuthi Subcarbonas, Cadmii Sulphas, Hydrargyri Oxidum Rubrum, Liquor Ferri Chloridi, Liquor Ferri Subsulphatis, Liquor Ferri Tersulphatis, Liquor Zinci Chloridi, and Pyroxylon.

ANTIDOTES.*

The same treatment as indicated for poisoning by Muriatic Acid and the other mineral acids. Nitric acid stains the skin *yellow.*]

---

* The symptoms of poisoning are those of the corrosive mineral acids.

EXTERNAL USE.

Nitric acid is undoubtedly the best form of local application in all forms of sloughing or phagedænic ulceration, whether of venereal origin or otherwise. In these rapidly destructive forms of disease, we shall do well to place our patient under the influence of an anæsthetic, and then apply the strong acid freely and thoroughly to all parts of the affected surface, and we shall thus often succeed in arresting a process which would otherwise go on to severe and even fatal disorganization.

It is also used locally in the treatment of *piles*, more especially those flat irritable forms of tumor which do not come readily within the reach of the clamp or ligature.

In the proportion of 10 or 20 minims to an ounce, nitric acid forms a good astringent lotion in cases of indolent or unhealthy sores; and it has been recommended by Dr. Roberts, of Manchester, as an injection into the bladder for the solution of *phosphatic calculi*.

INTERNAL USE.

Given internally, nitric acid has tonic properties, and, in combination with bark and opium, acts well in cases of foul or sloughing ulceration. Again, in constitutions broken down by syphilis or by chronic hepatic disease, we may very beneficially give our patient from 15 to 20 minims of the dilute acid three times a day, its action on the liver being by some supposed to have somewhat of a specific character.

℞. Acidi nitrici diluti	fʒij;	or 8		Gm.
Tincturæ opii	♏xl;	" 2	60	"
Tincturæ cinchonæ	f℥ss;	" 16		"
Decocti cinchonæ ad	f℥viij;	" 256		"

Misce. Capiat cochlearia magna duo ter in die.

In a case of foul or sloughing ulcer.

ACIDUM NITRO-MURIATICUM—NITRO-MURIATIC ACID (3 TO 5).

[Dose, ♏v–x (.30 to .60 gm.), well diluted.

Acidum Nitro-muriaticum Dilutum (f℥iv to Oj). Dose, ♏x–xv (.60 to 1 gm.).]

This is supposed to have some special action on the liver, and is most extensively used in chronic functional affections of that organ. It has also been highly recommended, in the form of bath, in various hepatic disorders in the proportion of 6 fluid ounces to each gallon of water. Or, internally—

℞. Acidi nitro-muriatici diluti	fʒij;	8	Gm.
Extract. taraxaci	f℥ss;	16	"
Spiritus chloroformi [Br.]	fʒiss;	6	"
Aquæ	q. s. ad f℥viij;	256	"

M. S. Capiat cochlearia magna duo ter in die.

In a case of sluggish liver.

[ACIDUM OXALICUM—OXALIC ACID.

OFFICINAL PREPARATION, U. S.

Ferri Oxalas. Dose, gr. ij–iij (.12 to .20 gm.).

POISONING.

Oxalic acid is a corrosive vegetable poison. It produces burning pain, nausea, and sometimes severe retching. Death may quickly ensue in collapse or convulsions, or may result from the subsequently developed severe gastro-intestinal inflammation.

Diluted it causes symptoms of cardiac paralysis.

When death is produced by oxalic acid, in some cases no trace of the drug remains, or there may be nothing to show for it beyond inflammation of the alimentary tract.

The test for oxalic acid is solution of calcium chloride, which causes a white precipitate (calcium oxalate).

ANTIDOTES.

Magnesia and lime form insoluble precipitates with oxalic acid, therefore compounds containing chalk or magnesia would constitute chemical antidotes. Tooth-powder, lime-water, oxide and carbonate of magnesia, or "the scrapings of the ceiling with a fire-shovel," may be given with propriety in cases of poisoning; which are not infrequent, since, owing to the resemblance between oxalic acid and Epsom salts, one may be accidentally substituted for the other. The common names *salts of sugar*, and (in its combination with potassa) *salts of lemon*, tend to mislead the public as to the poisonous character of the drug.

Effects and Uses.

Oxalic acid has been used, in small doses, internally, in *scurvy* and *phthisis*, but has nothing particular to commend it.]

ACIDUM PHOSPHORICUM GLACIALE—GLACIAL PHOSPHORIC ACID.

[Officinal Preparation, U. S.

Acidum Phosphoricum Dilutum. Dose, ♏viij–ʒj (.50 to 4. gm.).]

This acid was formerly held to be of advantage in *diabetes*, but more recent investigation has shown that instead of diminishing it actually tends to increase the amount of sugar given off by the urine. It therefore cannot be held to have any special significance from a therapeutic point of view, but may be adopted as an agreeable mode of introducing acid into the system, as its flavor is agreeable. We may take occasion, however, to mention a mistake which is not uncommonly made in prescribing, and that is to prescribe phosphoric acid with the view of obtaining the medical influence of phosphorus. Now it is well known that only from phosphorus in a free condition do we obtain any real benefit, and of this phosphoric acid contains no trace.

[It has, however, been used as a tonic and alterative in *rickets* and *scrofula;* and is an excellent adjuvant to cough-mixtures, or tonics, for elderly patients.]

ACIDUM SULPHURICUM—SULPHURIC ACID.

[Syn. *Elixir of Vitriol.*

Sulphuric acid of the specific gravity 1.843, *U. S.*

Officinal Preparations, U. S.

Acidum Sulphuricum Aromaticum (fʒvj in Oj). Dose, ♏viij–xxx (.50 to 2. gm.).

Acidum Sulphuricum Dilutum (f℥ij to Oj). Dose, ♏ij–v (.12 to .30 gm.).

Also enters into the manufacture of Acidum Sulphurosum, Aluminii Sulphas, Atropiæ Sulphas, Cadmii Sulphas, Ferri Sulphas, Hydrargyri Sulphas Flava, Liquor Ferri Subsulphatis, Liquor Ferri Tersulphatis, Oleum Æthereum, Quiniæ Sulphas, Acidum Hydrocyanicum Dilutum, Æther, Argenti Cyanidum, Chloroformum Purificatum, Hydrargyri Chloridum Corrosivum, Hydrargyri Chloridum Mite, Hydrargyri Cyanidum, Pyroxylon, Sodii Phosphas, Spiritus Ætheris Nitrosi, and Veratria.

TESTS.

If in a concentrated state, any organic matter placed in contact with it is blackened and charred; when mixed with an equal bulk of water, much heat is evolved; when boiled with copper filings or mercury, sulphurous acid gas is generated. When the acid is in a diluted state, the best test is nitrate of barium, which causes a dense white precipitate of sulphate of barium; this can be verified by calcining it for some minutes with an equal weight of charcoal, wrapped in platina foil, then introducing the residue into a glass tube and adding a few drops of muriatic acid. This will liberate sulphuretted hydrogen, which can be recognized by its odor, and by its blackening carbonate or acetate of lead.

POISONING.

The symptoms are those of an acrid, corrosive poison. They come on suddenly after taking food or medicine, and the patient soon becomes collapsed. Recovery is apt to be followed by stricture of the œsophagus.

ANTIDOTES.

Alkalies should be given in milk or soapsuds, though much water would be improper. Care should be taken not to rupture the stomach by the tube of the stomach-pump, or by inducing severe efforts at vomiting. The acid, when concentrated, discolors the mouth and lips, making a *black* slough. When administered medicinally it should be taken much diluted through a glass tube, in order to protect the teeth.]

EXTERNAL USE.

Strong sulphuric acid is the most powerful caustic of this group, rapidly charring and desiccating the tissues, from its great affinity for water. M. Velpeau, of Paris, strongly recommended its use in cancer, the acid being made into a paste with saffron, and applied to the morbid growth, it being found, after detachment of the sloughs, that a clean ulcerating surface remained; and Professor Syme proposed a modification of this plan, on the score of economy, by using sawdust instead of saffron. Ricord, of Paris, also advises the application of sulphuric acid in combination with charcoal to primary *syphilitic sores*, holding that, if this process is effectually carried out before the fourth day, we may hope to avert the evil consequences of constitutional infection.

Mr. Pollock has advised the local use of strong sulphuric acid in *caries* and *necrosis* and suppurating synovial membrane of joints, either applied on a glass rod, or injected, or brought into contact on lint with the diseased surfaces, in the proportion of one part of acid to two, three, or six parts of water; and this plan of treatment has been used with good success in St. George's Hospital (*vide* "Lancet," May 28, 1870, and "Medical Times and Gazette," December 11, 1875).

Internal Use.

Diluted sulphuric acid is a good astringent, and as such is extensively used in night sweats and in diarrhœa, more especially that which is so common in summer. It has also been advised, in the form of lemonade, as a prophylactic against *painters' colic*, and there is no doubt that it heightens materially the action of purgative salts, probably by increasing their solubility.

℞. Magnesii sulphatis	℥ij;	64	Gm.
Ferri sulphatis	gr. xxiv;	1	60
Acidi sulphurici diluti	fʒij;	8	
Infusi calumbæ	q. s. ad f℥viij;	256	

Misce, fiat mistura.
S. Capiat cochlearia magna duo omni mane.

℞. Acidi sulphurici diluti	fʒiiss;	10	Gm.
Tincturæ opii	fʒj;	4	"
Syrupi aurantii	f℥j;	32	"
Aquæ	q. s. ad f℥viij;	256	"

M. S. Capiat unciam unam ter in die post singulas sedes liquidas.

ACIDUM SULPHUROSUM—SULPHUROUS ACID.

[*An aqueous solution of sulphurous acid gas, having the odor of burning sulphur, and a sulphurous, sour, and somewhat astringent taste. Its specific gravity is about* 1.035.

Dose, fʒss and fʒj (2. to 4. gm.). Largely diluted with water.]

EXTERNAL USE.

The therapeutic properties of this acid depend in part on its very poisonous influence on the lowest forms of animal and vegetable life. Thus it forms a good application to those varieties of skin disease, as *tinea tonsurans*, *chloasma*, etc., which depend on the presence of a minute cryptogamic plant; and Dr. Dewar some years ago published a pamphlet in which he ascribed to this acid powers little short of marvelous. Going on this theory that a very great number of diseased conditions depend on the irritation of germs, Dr. Dewar most confidently advised its use in affections ranging from rheumatic fever to chilblains. Although experience has, naturally, not borne out his extravagant assertions, we have to thank him for making known to us the undoubtedly good effect of sulphurous acid in various forms of sore throat, used in considerable dilution either as spray or gargle. It is also a good disinfectant, as we know that the antiseptic properties of sulphur, when burnt for purifying purposes, depend on its formation.

INTERNAL USE.

Sulphurous acid has been recommended by Dr. Lawson in *pyrosis*, the dyspeptic symptoms attending which are due to various forms of leptothrix and vegetable growths burrowing in the mucous membrane of the stomach; and in *flatulence* it is also deserving of a trial.

[TANNIC ACID.

OFFICINAL PREPARATIONS, U. S.

Acidum Tannicum. Dose, gr. j–iv (.06 to .24 gm.).
Unguentum Acidi Tannici (ʒss to ℥j).
Glyceritum Acidi Tannici (ʒij to f℥j).

Suppositoria Acidi Tannici, each gr. v.
Trochisci Acidi Tannici, each gr. j.

The test for tannic acid is albumen, gelatin, or the salts of iron; with the first two it produces an insoluble precipitate, with the last a black color in solution.

Tannin is incompatible with albumen, gelatine, the glucosides, and substances containing alkaloids, and with most metallic salts in common use.

For medical uses, see GALLA.]

[ACIDUM TARTARICUM—TARTARIC ACID.

OFFICINAL PREPARATIONS, U. S.

Ferri et Ammonii Tartras. Dose, gr. x–xxx (.60 to 2. gm.).

Pulveres Effervescentes. (Soda powders.)

Pulveres Effervescentes Aperientes. (Seidlitz powders.)

POISONING.

Tartaric acid is a corrosive vegetable poison; its symptoms are very analogous to those caused by oxalic acid, and the morbid appearances likewise resemble those produced by oxalic acid.

TESTS.

When heated on platina foil, it burns with a pale reddish flame, and exhales a peculiar acrid vapor, leaving much carbonized matter. When a solution is treated with lime-water, it affords a white precipitate, soluble in an excess of the acid; when treated with caustic potassa, it affords a granular precipitate of the bitartrate.

ANTIDOTES.

The alkalies, magnesia, lime, soap, or the alkaline carbonates.

INTERNAL USE.

It has been stated that tartaric acid, in .60 to 1.20 gm. (gr. x–xx) doses, given thrice daily will render the urine acid. The tartrate of magnesium has been recommended as a cheaper substitute for the citrate, as an aperient, and is considered quite as efficient. In sweetened solution, tartaric acid is sometimes used as a refrigerant drink in fevers. The tartrates are laxative and diuretic.]

[ACIDUM VALERIANICUM—VALERIANIC ACID.

A colorless liquid, of an oily consistence, a penetrating disagreeable odor, and caustic taste. Its specific gravity is 0.935. *U. S.*

OFFICINAL PREPARATIONS, U. S.

Ammonii Valerianas. Dose, gr. ij–v (.12 to .30 gm.).
Quiniæ Valerianas. Dose, gr. j–iij (.06 to .18 gm.).
Zinci Valerianas. Dose, gr. j–ij (.06 to .12 gm.).
Morphia Valerianate (not off.). Dose, gr. $\frac{1}{6}$ to $\frac{1}{2}$ (.01 to .03 gm.).

PROPERTIES.

Valerianic acid is an example of an organic acid made by synthesis, through the oxidation of amylic alcohol (fusel oil) by chromic acid. The valerianate of the oxide of amyl is used as an artificial fruit-essence, when largely diluted.

Valerianic acid is said to resemble valerian in its effects, and in the form of the valerianates, may be used in *nervous headache*, *neuralgia*, and *hysteria*. The salts are best given dissolved in simple elixir, or in a pill.]

[Acida.

List of acids, officinal in the U. S. Pharmacopœia :—

Acidum Aceticum
" " Dilutum
" Arseniosum
" Benzoicum
" Carbolicum
" " Impurum
" Chromicum
" Citricum
" Gallicum
" Hydrocyanicum Dilutum
" Lacticum
" Muriaticum
" " Dilutum
" Nitricum

Acidum Nitricum Dilutum
" Nitro-Muriaticum
" " Dilutum
" Oxalicum
" Phosphoricum Dilutum
" " Glaciale
" Sulphuricum
" " Aromaticum
" " Dilutum
" Sulphurosum
" Tannicum
" Tartaricum
" Valerianicum.]

ACONITUM—ACONITE.

[**Aconiti Folia.**—The leaves of Aconitum Napellus, U. S.

Aconiti Radix.—The root of Aconitum Napellus, U. S.

OFFICINAL PREPARATIONS, U. S.

Aconitia (from the root). Crystallized and amorphous, or Aconitine, Pseudo-aconitine, Napellina, Napeline, etc.

Extractum Aconiti (of the leaves). Dose, gr. ss (.03 gm.).

Emplastrum Aconiti (from the root).

Linimentum Aconiti (from the root, ℥xvj to Oj).

Tinctura Aconiti Radicis. (℥vj to Oj.) Dose, gtt. j–v (.06 to .30 gm.).

(*Fleming's tincture of aconite root contains* ℥xss *to* Oj.)

ANTIDOTES.

Finely powdered animal charcoal, tannin, astringent infusions, and hot alcoholic stimulants, are useful. The stomach should be carefully washed out, and subsequent symptoms met *pro re nata.*]

Poisonous Properties.

Aconite may kill either by direct cardiac syncope, or, if the action be less rapid, by respiratory failure. Great muscular weakness is noted, the heart's action becoming feeble and irregular, the face pale, the body bedewed with clammy sweat, the pupils first contracted, and then dilated shortly before death closes the scene. The resemblance of aconite root to horse-radish has afforded several lamentable opportunities of studying cases of accidental poisoning.

Therapeutical.

In poisoning by aconite, we must endeavor to sustain the flagging action of the heart by giving stimulants, and keeping the patient most rigidly in the recumbent posture, as death has occurred from syncope produced by suddenly sitting up in bed. *Digitalis* has been proposed as the physiological antidote, bracing up and restoring the contractility of the heart muscle (Fothergill). [20 minims of tincture of digitalis may be administered hypodermically.]

LOCAL ACTION.

Physiological.	*Therapeutical.*
Aconite, locally applied, causes a sensation of tingling, followed by numbness of the skin, from a paralyzing influence, no doubt, on the sensory nerves. It may also bring about some local vasomotor paralysis.	Aconite is a most valuable local sedative in painful nervous affections, and more especially in *facial neuralgia*, where the tincture or liniment, applied along the course of the affected nerve, will often allay and even remove suffering.

CONSTITUTIONAL ACTION.

Physiological.	*Therapeutical.*
I. *On Nervous System.*—1. *Brain.*—In poisoning by aconite, the intellectual faculties are usually quite unaffected, but in some cases stupor has been observed.	
2. *Spinal Cord.*—Aconite paralyzes both the reflex and the motor activity of the cord, as evidenced by almost total loss of power in the muscular system.	
The respiratory centre also eventually becomes paralyzed, and death may result by suffocation.	
3. Although this loss of voluntary movement is supposed to be primarily spinal in origin, it is believed that the motor nerves themselves are secondarily affected, the paralyzing influence beginning at their peripheral extremities. The inhibitory cardiac ganglia are first stimulated, and secondly de-	3. Aconite is one of our best remedies in *facial neuralgia*, given either alone or in combination with quinine. In *sick headache* also it is of service, and here it will be prescribed along with tincture of Indian hemp.

pressed, and a sedative effect is produced on the sensory nerves, the earliest indication of the action of the drug being tingling followed by numbness and anæsthesia of the lips and throat.

Opinions differ as to the influence of aconite on the vaso-motor nerves, and it is not believed by many authorities to have any special operation over this system. Dr. Bagshawe, however, has published some cases of facial sympathetic paralysis, with injection and sweating, following the local application of aconite, and the diaphoretic action, so often noted, must proceed from this cause. Experimental evidence, however, is very conflicting in this, as well as in other points, respecting the physiological actions of aconite.

II. *Circulating Apparatus.*—Aconite is essentially a cardiac sedative, slowing the action of the heart at first from inhibitory stimulation, but then causing an increase in the rapidity of the pulsations, with feebleness and irregularity, ending in death by arrest of all movement in diastole. At the same time the arterial pressure falls in very marked degree.

II. Aconite is an excellent antiphlogistic, cutting short inflammatory processes in their early stages. Thus in *pneumonia*, *pleurisy*, *peritonitis*, *erysipelas*, *rheumatic fever*, and in the short sharp feverish affections of children, it is of signal service, and seems to have a directly curative action. Dr. John Harley (St. Thos. Hosp. Reports, New Series, vol. v.) made some interesting observations at the London Fever Hospital on the action of aconitia. He found that by giving $\frac{1}{200}$

of a grain once a day, which was quite sufficient to produce physiological effects, no influence was exerted on the course of 29 cases of scarlet fever, and that diaphoresis was only twice produced; whilst in 20 cases of typhus but slight controlling influence was exerted over the febrile process, although the cases did unusually well. This may prove either that the dose was not repeated sufficiently often, or that aconite has no real power over fully developed inflammatory processes. In *coryza* and in *acute tonsillitis*, also, it has been much praised for the way in which it checks the full development of these troublesome affections, and it has been highly praised as given in 2 minim doses, where we have any reason to fear the occurrence of rigor, after catheterism.

III. *Respiration and Temperature.* — The respiratory movements tend to become slow, finally irregular, and in some cases, and almost universally in the lower animals, death results from cessation of breathing.

The temperature falls decidedly.

IV. *Digestive and Secreting Apparatus.* — Aconite has no special influence on digestion. It increases somewhat the salivary secretion,

III. Some part of the good effect of aconite in these febrile affections must be due to its power in slowing the breathing and reducing the temperature.

IV. [It has been given in the vomiting of pregnancy, but, like most remedies for this disorder, with only temporary benefit.]

and augments largely the action of the perspiratory apparatus of the skin, bringing out in some instances an irritable vesicular eruption. The urine is also somewhat increased in quantity.

Aconite is therefore an excellent diaphoretic, and to this action in some degree is due its antipyretic properties.

ABSORPTION AND MODE OF ELIMINATION.

Aconite is rapidly absorbed, and given out probably by the urine. The alkaloid aconitia, if accidentally blown into the eyes or respiratory passages, causes well-marked conjunctival and bronchial irritation. Prof. Gubler, of Paris, values it very highly in neuralgia of the 5th nerve, which he has never known to resist a quarter of a milligramme of the nitrate of aconitia, corresponding to one-half milligramme of the pure drug. He thinks we distrust the drug too much, but draws attention to a peculiar præcordial disturbance, with palpitation and cardiac irregularity, rarely following its use, and warns us never to employ it in heart disease.

CAUTIONS AND MODES OF ADMINISTRATION.

The very poisonous nature of aconite renders caution necessary in its use, and we must prescribe it with great care in old persons, or where any suspicion exists of feebleness of the heart's action. In sound constitutions, however, and more especially in the case of children, we may use it with freedom, often obtaining really extraordinary results.

It is essential to encounter the inflammation at an early stage, before structural changes have set in; and it is important to combine a little stimulant with the drug. In very acute cases, our best practice will be to give the tincture in small and very often repeated doses, carefully watching the effect on the pulse. One drop every ten minutes, half-hour, or hour, will be the best arrangement during the first day, after which every two hours will be a sufficient interval, the thermometer giving us meanwhile reliable information regarding the progress of the inflammatory condition. In *facial neuralgia*, also, we shall obtain the best results by drop doses repeated at very short intervals, and in no case is it well to overstep a maximum dose of 5 minims.

The alkaloid aconitia is occasionally used as an external application [in ointment, containing gr. j–ij to the ounce].

[It has lately been used in neuralgia, especially trigeminal, in doses of $\frac{1}{120}$ to $\frac{1}{124}$ of a grain (.0005 Gm.). In feeble persons the dose to begin with should not be higher than gr. $\frac{1}{300}$ or $\frac{1}{250}$ (Seguin). Murrell has lately called attention to the great variation of the commercial forms of aconitia, which, as usually supplied, is not a simple substance, but a mixture of several alkaloids. English aconitia is said to be seventeen times stronger than the German. Dangerous symptoms have been reported from minute doses, and it seems advisable for the present to employ the tincture or extract in preference.

Napelline, discovered by Hübschmann in 1857, is another alkaloid of aconite derived from the root. Duquesnel subsequently obtained an alkaloid, which he designates *napeline*, which is less active, and has more hypnotic and calmative properties than aconitia, and it is claimed that it produces quiet and profound sleep in two doses of from 3 to 4 cgr. ($\frac{1}{2}$ to $\frac{2}{3}$ grain); it has also been employed with advantage in *neuralgia, insomnia*, and *excitable nervous system.*[1] (Laborde.)]

[ADEPS—LARD.

The prepared fat of Sus Scrofa, U. S.

OFFICINAL PREPARATIONS.

Unguentum, used as a vehicle.
Ceratum, used as a vehicle.

Lard is emollient and is sometimes used in frictions, but is chiefly employed in Pharmacy in the preparation of ointments and cerates. In obstetrical and gynæcological practice, lard is considered to be a universal lubricant, and is rarely absent from the lying-in chamber, where it is also used as a detergent to remove the *vernix caseosa* from the newborn. Washed lard is occasionally employed to prevent the eyelids from adhering in catarrhal conjunctivitis.]

---

[1] [Medical News, 1882, p. 158.]

ÆTHER—ETHER.

[Used in preparing Acidum Tannicum, Ceratum Sabinæ, Oleoresina Capsici, Oleoresina Cubebæ, Oleoresina Filicis, Oleoresina Lupulinæ, Oleoresina Piperis, and Tinctura Opii Deodorata.

OFFICINAL PREPARATIONS, U. S.

Æther Fortior—pure ether (for producing anæsthesia).
Spiritus Ætheris Compositus (Hoffmann's Anodyne). ♏x–ʒj (.60 to 4 Gm.).

Æther fortior is used in preparing Aconitia, Atropiæ Sulphas, Collodium, Collodium cum Cantharide, Oleum Æthereum, and Oleoresina Zingiberis.]

LOCAL ACTION.

Physiological.

The projection on the skin of a very fine spray of specially pure ether, by means of Dr. Richardson's ingenious instrument, causes at first a sensation of extreme cold, attended occasionally by the formation of frost. In about a minute, or even less, to this succeeds a sudden blanching of the surface, the skin becoming hard and quite insensible, and a sharp cutting pain, like a burn, being at the same time experienced.

If this action is kept up for some time, redness, tingling, vesication, and even sloughing may be produced.

Be careful always to procure the pure anæsthetic ether, which has a low boiling point, and evaporates rapidly, as ordinary qualities

Therapeutical.

Advantage has been taken of the insensibility to pain produced by the ether spray, to use it extensively during the performance of many minor operations, and more especially in those which consist merely of a single cut or prick. Under these conditions it acts admirably, but the hard and brawny state of the integument produced by its action renders it of little or no aid where dissection or manipulations of deep-seated structures are required. Further objections to its use are the acute pain attending application, and the subsequent redness, tingling, and irritation of the skin [and possible sloughing].

It has also been recommended as a sedative in of the drug are of no use for local anæsthesia.

neuralgia, and as a convenient means of applying intense cold; and cases of its successful employment in *chorea*, applied to the upper part of the spine, have been recorded.

INTERNAL ACTIONS.

Ether, when taken internally, is stimulant and antispasmodic. The intoxicating effects rapidly produced, as rapidly pass away, and great excitement and exhilaration may be succeeded in an hour by perfect recovery. It has therefore been termed a diffusible stimulant.

It is therefore a useful remedy in *hysteria*, *flatulence*, *spasmodic asthma*, *bronchitis*, *dilated heart*, etc.

COMBINED INTERNAL AND EXTERNAL USE.

Physiological.

Ether has powerful anæsthetic properties, and differs from chloroform in the following respects: It increases instead of diminishing the arterial pressure, and acts as a tonic to the heart, which continues to pulsate in fatal cases after the arrest of breathing. The following is the order of involvement of the nerve centres:—

1. The cerebrum.
2. The sensory centres of the cord.
3. The motor centres of the cord.
4. The sensory centres of the medulla oblongata.

Therapeutical.

The stimulant action of ether on the heart has caused its use to be warmly advocated as in all respects superior to chloroform. It cannot, however, be considered absolutely safe, and it labors under several disadvantages, such as the greater length of time required to produce anæsthesia, the violent struggling occasionally observed, the disagreeable smell of the drug, etc.; whilst it occasionally even happens that some persons cannot be fully brought under its influence. Pneumonia and bronchial irritation have been observed

5. The motor centres of the medulla.

by some French authorities to follow its inhalation, nor is its safety so great as has sometimes been supposed, as 13 deaths from its use have been recorded in England, and probably 5 in America (Cawtley Dawson, of Leeds. *Brit. Med. Journal*, March, 1878). It is therefore doubtful whether it will ever effectually displace the more commonly-used anæsthetic[1].

Mode of Administration.

It is most important that no air be admitted during ether administration, as most violent resistance and dangerous struggling supervene if the vapor be not inhaled in a state of purity. Non-attendance to this point caused ether to fall into discredit soon after its original introduction, and it is only lately that we have been fully convinced that, by using this simple precaution, we may readily obtain complete anæsthesia and perfect muscular relaxation in from three to eight minutes. Various inhalers have been devised to fit tightly over the mouth and nose, and it is here essential that some instrument of the kind should be used.

When operating by artificial light, do not forget the inflammable nature of the vapor of ether. [The length of time needed to get a patient under ether is no longer a difficulty. Within the last four or five years the use of ether has increased rapidly in England in consequence of the adoption of better methods of administering it. Formerly the ether was given so abundantly as to excite choking and violent struggling. Now, methods, which produce a certain degree of asphyxia, by preventing the access of fresh air and allowing the same air to be breathed over and over again, are generally adopted. By causing this degree of asphyxia the patient is made to take deep and frequent respirations, which carry the etherized atmosphere down to the lung cells. The atmosphere is thus made effective without being so strong as to cause local irritation. The least unpleasant way of inhaling ether is to begin with laughing-gas only, and introduce ether vapor gradually along with gas, without allowing any fresh air to be admitted.—C.]

---

[1] [These strictures must be considered as the criticism of an English author upon English ether, which is declared to be of very inferior quality by those who have had an opportunity of personally comparing it with the American. This will to a great extent explain the adherence of the English to chloroform, in spite of its acknowledged greater danger ; and at the same time prevents them from understanding the popularity of ether in the United States. The fact is that the washed ether (æther fortior, U. S. P.) as made by Dr. Squibb, Powers & Weightman, and others, is perfectly free from the objections just stated ; it is pure, nearly odorless, and efficient in almost the same doses as chloroform, while it is incomparably safer than its rival.—F. W.]

[For Mr. Clover's observations upon the Choice of Anæsthetics see page 58.]

Ætherea.

Æther.
Æther fortior.
Chloroformum purificatum.
Oleum æthereum.

ALCOHOL—ALCOHOL.

[*Spirit of the specific gravity* 0.835, *U. S.*

OFFICINAL PREPARATIONS, U. S.

Alcohol Dilutum. Diluted one-half with water.

Alcohol Fortius. Spirit of the specific gravity 0.817.

Vinum Xericum. Sherry wine (about 19 per cent. alcohol).

Vinum Portense. Port wine (about 23 per cent. alcohol).

Spiritus Vini Gallici. Brandy (about 50 per cent. alcohol).

Spiritus Frumenti. Whiskey (about 50 per cent. alcohol).

Spiritus Myrciæ. Bay rum (for external use).

(**Spiritus Genevæ,** Gin, is not officinal; the Spiritus Juniperi Compositus of the Pharmacopœia may be regarded as its equivalent.)

Alcohol makes a good menstruum, and is the basis of the SPIRITS and TINCTURES of the Pharmacopœia; the former being solutions of volatile substances in alcohol, the latter generally containing the active principles of plants obtained by maceration and percolation.

TESTS.

The chemical *test* consists in removing the contents of the stomach, mixing them with distilled water, filtering, and distilling in union with carbonate of potassium or sodium; the product is mixed with fused chloride of sodium, and again distilled. Alcohol, if present, will be found in the receiver.]

ANTIDOTES.

The treatment of acute alcoholic poisoning must consist in removing all the spirit from the stomach by means of the stomach-pump, and endeavoring to rouse the patient from his perilous state of coma by cold affusion, strong coffee, surface stimulation, and galvanism, whilst artificial respiration may be employed to stimulate the flagging breathing powers. In more chronic cases, withdraw all stimulant absolutely and at once; insure sleep by chloral and bromide of potassium; and try to diminish the morbid craving by capsicum, nux vomica, the mineral acids, and a liberal and varied diet.

LOCAL ACTIONS.

Physiological.

Alcohol has some external astringent properties from its power of hardening albumen and thus condensing the tissues, whilst, from its rapid evaporation, it produces a cooling effect. [By its constringing effects upon the smaller vessels and nerves, it checks active congestion, reduces inflammatory action, and relieves pain.]

Therapeutical.

This hardening process has been turned to practical account for the prevention of bedsores, and alcohol is also a usual ingredient in the now somewhat old-fashioned spirit or evaporating lotions. [Alcohol has been used with great success by Ollive (La France Médicale, No. 28, 1882) as a topical application for acute inflammation of cellular tissue. Pure concentrated (80° or 90°) alcohol is applied on compresses of cotton wadding, and frequently renewed. There is marked relief of pain, and the inflammation is decidedly retarded or aborted.[1]]

INTERNAL ACTIONS AND USES.

1. *On Brain and Nervous System.*—Alcohol primarily stimulates the cerebral centres by dilating their arteries, and so admitting more blood; secondly, excitement supervenes with impaired muscular co-ordination, and finally coma, which may prove fatal if the dose taken be sufficiently large. Whilst it may also in small doses stimulate the spinal cord, in larger quantities it undoubtedly weakens the functions of that structure, causing indisposition for active exertion, as well as actual want of power. This has been proved by the experience of campaigns, but more especially that in Ashantee, where it was found that alcohol distinctly diminished the power of bearing fatigue, and also by the experiments of Parkes, which showed most conclusively that 2 or 3 ounce doses of spirit given several times per diem to a couple of healthy men engaged in laborious work, caused a slight primary increase of energy,

1. A moderate quantity of alcohol stimulates the mental faculties, whilst larger doses become narcotic and even anæsthetic. In chronic nerve debility, as *neuralgia*, we may often relieve pain by the use of stimulants; but these are precisely the class of cases in which habits of intemperance are most readily formed.

Nothing seems better proved than the fact that alcohol lessens the capacity for active muscular exertion, and it is therefore well to advise sportsmen, soldiers, and others who are about to undergo severe bodily fatigue, to reserve all stimulant until their day's work is over, when it may be of real service. In the Ashantee campaign a ration of rum on reaching camp at night seemed to revive the men after their exposure and labors.

In those cases of chronic alcoholic poisoning described by Wilks, we must follow his advice, and entirely cut off all supplies of strong drink.

---

[1] [Phila. Med. Times, 1882, p. 459.]

but a secondary well-marked indisposition for muscular exertion, with actual diminution of bodily vigor. Dr. Wilks has also drawn attention to a remarkable series of cases in which paraplegia, and numbness, anæsthesia, and violent shooting pains, have been caused by the excessive and long-continued use of alcohol.

On the sympathetic system, the effects are somewhat varied; for although the dilatation of certain vascular areas must depend on paralysis of these nerves, there seems no doubt that, as Binz has shown, alcohol in inflammatory conditions stimulates the sympathetic, contracts the arterioles, and prevents that migration of the white corpuscles which constitutes the essence of this morbid process. The chronic abuse of alcohol causes nervous tremors and debility, gradually leading up to that semi-maniacal state known as delirium tremens, in which the victim is haunted by the constant presence of spectral illusions, preventing sleep, and finally wearing him out if unchecked. The brain, like most of the internal organs of the body, suffers in alcoholism from the contraction of new areolar tissue pressing upon and obliterating some of the nervous elements.

This is, no doubt, one explanation of the beneficial action of alcohol in some cases of acute inflammation.

2. *On Heart and Circulation.*—Alcohol in moderate doses has a stimulating influence on the heart, and dilatation of the peripheral vessels and of those of the brain is produced.

In chronic alcoholism we find a degenerated condition of the larger vessels, known as atheroma

3. *Respiration and Temperature.*—The old observations of Liebig seemed to show that alcohol was a respiratory food, and was largely burnt off in the lungs, thus aiding in the production of animal heat. It is now found, however, that under

2. To its action on the circulation, however, we must ascribe a good deal of the beneficial influence of alcohol in the treatment of disease. When the powers of life show signs of failing, when the first sound of the heart grows weak, the pulse feeble, compressible, and irregular, when syncope threatens, and delirium is beginning, the indications for the administration of alcohol are complete, and it will be found to act well when the tongue moistens, the pulse gains in volume and regularity, sound refreshing sleep is obtained, and the temperature falls. It is, of course, difficult to lay down exact rules as to the precise stage of fevers at which we may best prescribe alcohol, but ordinarily we should do so in *typhus* about the seventh day, in *typhoid* the twelfth, in *smallpox* when the secondary fever is developed, and in acute inflammations, generally, when the heart begins to fail, and the nervous system to show indications of debility.

3. This lowering of temperature must also be explained by diminished tissue metamorphosis, and by a partial arrest of the oxygen-bearing function of the red corpuscles of the blood. It is therefore evident that we must warn persons about to

its use the carbonic acid given off from the lungs is diminished, and that the body heat is lowered. The carbonic acid, however, is probably only apparently diminished, because it is retained in the blood. When but small doses are taken, only a slight cooling effect is produced, whilst large quantities may reduce the temperature by two or three degrees, the explanation being partly that the dilatation of the cutaneous vessels enables more blood to be removed from the heat-producing centres, spread out and cooled in the wide sheet of the superficial circulation, and then returned, to abstract more warmth from the internal organs. Another curious fact is that alcohol also diminishes the power of resistance to cold; and this has been proved not only by the experience of Arctic voyagers, but by the following experiment: If we place two animals, one of which has been dosed with alcohol, in a chamber of which the temperature has been reduced to 10° below freezing point, both will speedily be benumbed to sleep; but whilst the healthy animal will be supported by the combustion of its tissues and survive the shock, its companion will perish from this heat-producing process being interfered with by the spirit. be exposed to severe cold of the fallacious nature of the old notion that alcohol furnishes true warmth. Post-mortem temperature is also lowered by alcohol, thus proving that part of this action is due to a chemical process, causing a paralyzing influence on the protoplasm of the heat-producing cells. To produce an antipyretic effect, an adult will require at least two ounces of absolute alcohol.

There can, however, be no doubt that we may often alleviate the evil effects of a chill by a dose of spirit [especially in the form of a hot toddy], which releases the capillaries of the skin from their state of morbid contraction, stimulates the circulation by whipping up the heart, and thus prevents congestion of internal organs.

4. *Intestinal Tract.*—In small doses, alcohol stimulates the appetite and increases the supply of gastric juice; but if given in larger quantities, this secretion is checked, nausea is produced, and the desire for food disappears. In the advanced stages of chronic alcoholism, the stomach is injured by the contraction of the new areolar tissue obliterating its glands, and hence we find dyspepsia with morning vomiting a very common symptom in drunkards.

5. *Secreting Organs.*—Alcohol stimulates the liver, and this organ is one of the first to suffer from chronic abuse of stimulant, the areolar tissues being irritated, and an increased formation taking place, which gives a primary enlargement to the organ. These newly formed structures, however, having the tendency to shrink or contract, gradually obliterate the true secreting elements of the gland, which grows smaller and harder, ascites eventually following from pressure on the portal vein and obstructed return of blood from the abdominal circulation.

Kidneys.—Alcohol has no specially well-marked effect on the urinary secretion, but the kidneys may also suffer from the cirrhotic degeneration just described.

Alcohol is thus often beneficial in the case of weakly persons, and more especially at the extremes of life, by giving tone to the digestive organs and aiding the due assimilation of food. Although its use is by no means essential to the healthy, it is of great service to dwellers in large towns, and others whose mode of life involves much mental strain. [Spirits should never be taken into an empty stomach, but should be accompanied by food.]

Binz values alcohol as a food in fevers, not as actually building up the tissues directly, but as an easily burning fuel, from whose combustion, in oft-repeated small doses, the heat required to generate vital force may be derived, sparing the reserve of fat in the body and producing force.

Frankland puts down the force-producing power of alcohol as 7 to coal 8. [But we must not overlook the fact that the power of the system to develop and utilize this fuel is very limited.]

MODE OF ELIMINATION.

Alcohol very rapidly enters the blood, and is rapidly given out, in small part at least, by the breath, but it probably "undergoes combustion to a great degree in the body, maintains or increases the body weight, and prolongs life on an insufficient diet. It is therefore entitled to be reckoned as a food" (Brunton). Much discussion has been expended on its elimination or combustion, and some years ago the hopes of temperance agitators were much raised by the apparent result of experiments put forward by two French observers, which seemed to prove that all the ingested alcohol is given out unchanged in the urinary secretion. Anstie and Dupré, however, showed the fallacy of this by pointing out that even the urine of the most rigid abstainers contains a substance which cannot, by the chromic acid test, be distinguished from alcohol, and it has since been asserted that this may actually be alcohol derived from converted liver sugar.

A good deal of uncertainty still prevails regarding the ultimate destination of alcohol. Some authorities believe that it is first converted in the blood into aldehyde, then acetic acid, and finally carbonic acid and water. Wanklyn holds that it may be converted in part, at least, into glycol; but Binz tells us that no secondary product has ever been found, and that it is directly oxidized into carbonic acid and water, being completely destroyed in the animal organism, more than three per cent. being never found in the urine, under the most favorable conditions.

As regards the dose of alcohol, it is manifestly impossible to lay down any hard-and-fast rules, as we must of necessity be guided by the constitution of the patient and the symptoms of his special case. As a rule we may say that about 8 oz. of brandy may be sufficient in typhus or any acute illness, and that 16 oz. may be looked upon as the quantity which it is well not to exceed. In a state of health, 2 oz. of absolute alcohol per diem is usually considered a maximum allowance. But we must always remember the golden maxim, never to permit stimulants to enter the stomach save in combination with food.

It is of some importance to consider the forms of alcohol best adapted for varying cases, and we may say, generally, that champagne acts well in sudden and rapid sinking, whilst good whiskey or brandy may be recommended in ordinary acute illness. Port and Madeira are well suited for cases of debility; and in convalescence from acute illness and digestive feebleness, malt liquors and Burgundy will often be found to be of great service; but we must always beware of the possibility of leading our patients into disastrous habits of self-indulgence by a lack of precision in our directions as to quantity. The actual amount to be taken at each dose, and the proper periods of administration, must be carefully written down, remembering that under these circumstances we must look upon the alcohol as a drug. In fact, some authorities go so far as to recommend that we should invariably use spirits of wine, to be prescribed in regular form; but this is manifestly injudicious, as it is not only the crude spirit, which is an active agent, but the sugar, ethers, and other ingredients, more especially of old wine, are of real value from a therapeutical point of view.

We are bound, so far as may be, to insure all possible purity, and more especially to avoid the adulteration with fusel oil, as this admixture causes very heavy intoxication, with disagreeable headache and other after-effects. Another injurious form of adulteration has been pointed out by Dr. Crichton Browne, and that is picrotoxine, which, added, as it often is, to beer, produces epileptiform seizures.

The following are the relative proportions of absolute alcohol in the liquors most commonly in use:—

Brandy, gin, whiskey	30 to 50	per cent.
Sweet Spanish and Italian wines	13 to 17	"
Hock and claret	8 to 11	"
Edinburgh ale	6	"
Bavarian beer	4 to 5	"
Stout	4	"

[**Spiritus Ætheris Compositus** is an alcoholic solution of ether, impregnated with oil of wine, and is popularly known as Hoffmann's anodyne liquor. It is used in *hysteria* and *nervousness*. Dose, ♏x to fʒj (.60 to 4. Gm.)]

[By the action of sulphuric and nitric acids upon stronger alcohol, nitrous ether is produced, which, in combination with alcohol, is called spirit of nitrous ether, or, commonly, sweet spirits of nitre.]

Spiritus Ætheris Nitrosi. This preparation, in doses of from 2. to 8. grammes (from ½ fl. drachm to 2 fl.

drachms), is diuretic and diaphoretic, and is much used in feverish conditions.

[ALCOHOL AMYLICUM—AMYLIC ALCOHOL.

Syn. Fusel Oil.

A peculiar alcohol obtained from fermented grain or potatoes by continuing the process of distillation after the ordinary spirit has ceased to come over. U. S.

Amylic alcohol is an active irritant poison, for which no direct antidote is known.

OFFICINAL PREPARATIONS, U. S.

Ammonii Valerianas and **Quiniæ Valerianas.**

In addition to valerianic acid and its salts, amylic alcohol is used in the manufacture of the non-officinal nitrite of amyl, which has become of sufficient interest to warrant extended notice. It has come into general use, although not yet accepted by the Pharmacopœia, and will be found among the new remedies at the end of this section.

The valerianates are used for the same purpose (hysteria and nervousness) for which valerian formerly was given.

For discussion of effects, see VALERIAN.]

[ALLIUM—GARLIC.

The bulb of Allium sativum, U. S.

Dose of the fresh bulbs, ʒj–ij (4 to 8 Gm.).

OFFICINAL PREPARATION, U. S.

Syrupus Allii. Dose, fʒj, or for an infant ♏ v–x (.30 to 4. Gm.).

Garlic is a stimulating expectorant, and is used with good effect in the later stages of *catarrhal bronchitis*, or suffocative catarrh in young children, in which cases it may also be used as a poultice to the chest. These poultices, composed of the freshly boiled bulbs pounded into a mass, used either alone or with an equal quantity of linseed meal, may also be used in infantile convulsions, applied to the back and legs, or the oil of garlic may be used as a rubefacient.

The following would be an appropriate formula for the catarrhal bronchitis of infants :—

℞.	Syr. allii	f℥j ;	or	32	Gm.	
	" ipecacuanhæ	fʒiij ;	"	12	"	
	" tolutani	fʒv ;	"	20	"	
	" acaciæ	fʒvj ;	"	24	"	
	Tinct. opii camphorat. q. s. ad	f℥iij ;	"	96	"	M.
S.	Dose, ♏xx to fʒj.]					

ALOE—ALOES.

[**Aloe Barbadensis,** Barbadoes Aloes. *The inspissated juice of the leaves of Aloe vulgaris, U. S.*

Aloe Capensis, Cape Aloes. *The inspissated juice of the leaves of Aloe spicata, and of other species of Aloe.*

Aloe Socotrina, Socotrine Aloes. *The inspissated juice of the leaves of Aloe socotrina.*

OFFICINAL PREPARATIONS, U. S.

Aloe Purificata, purified aloes. Dose, gr. v–x (.30 to .60 Gm.).

Pilulæ Aloës. (Aloes and soap, āā 1 part.) 2 grs. of aloes in each pill.

Pilulæ Aloës et Assafœtidæ. (Aloes, assafœtida, and soap, āā 1 part.) 1⅓ grs. aloes in each pill.

Pilulæ Aloës et Mastiches. (Aloes 4 parts, mastic and rose leaves, āā 1 part.) 2 grs. in each pill.

Pilulæ Aloës et Myrrhæ. (Purified Aloes, 4 parts, myrrh and aromatic powder, āā 1 part.) 2 grs. in each pill.

Pilulæ Rhei Compositæ. (Each Aloes gr. jss, rhubarb gr. ij.)

Pulvis Aloës et Canellæ. (Aloes, 4 parts, canella 1 part.)

Tinctura Aloës. (℥ss to Oj.) Dose, fʒj–iij (4. to 12. Gm.).

Tinctura Aloës et Myrrhæ. (āā ℥jss in Oj.) Dose, fʒj–ij (4. to 8. Gm.).

Tinctura Benzoini Composita. Dose, ♏x–xxx (.60 to 2. Gm.).

Vinum Aloës (Aloes, cardamom, and ginger, in sherry wine). Dose, fʒj (4 Gm.).

Suppositoria Aloës. Each containing gr. ij of purified aloes.]

Physiological Action.

Aloes acts on the lower part of the large intestine, stimulating its peristaltic movements, and causing the evacuation of formed and only slightly softened feces. It also increases the secretion of bile, and some authorities hold that its purgative action is merely secondary to this. A good deal of congestion about the rectum is produced, and a sympathetically stimulating effect may extend to the uterus, and tend to excite its functions.

The recent experiments of Rutherford have shown aloes to be possessed of undoubted cholagogue properties.

[The active principle is termed ALOIN, which is sometimes used instead of aloes in from one-half to one-third of the dose. "Its cathartic action is said to be uniform, rather more speedy than that of crude aloes, and unattended by griping."[1]]

Therapeutical Action.

Aloes is a very certain, efficient, and mild purgative [in doses of ten to twenty grains], acting, however, rather slowly, and seldom producing its effects before from six to twelve hours.

It occasionally, however, gripes, and is, therefore, usual given in combination with other remedies which diminish this tendency, and, from its action on the lower bowel, it must be avoided in any local inflammatory condition, or in the acuter forms of hæmorrhoids.

Its mild and slow action has caused it to be much used in dyspepsia; it forms a principal constituent of most dinner pills; and it is also a popular remedy in habitual constipation. It has also emmenagogue properties depending partly, no doubt, on the sympathy of contiguity. In the form of pill or decoction, and given, as laid down by Graves, at the time when the catamenia are naturally expected, it often proves most efficient. [The purified aloes should be used, as the commercial aloes contains impurities.]

---

[1] The National Dispensatory, Phila., 1879, p. 137.

Dose, etc.

The most useful preparations of aloes are, the compound decoction, dose, f℥j to f℥ij;[1] the pil. aloes et myrrhæ; and aloes and iron.

[For chronic constipation :—

℞.	Ext. belladonnæ	gr. $\frac{1}{8}$;	or	01 Gm.	
	" colocynth. comp.				
	Aloës, āā	gr. jss;	"	09 "	
	Ol. anisi	♏j;	"	06 "	M.

Ft. pilula et mitte tales No. xij.
S. Dose, two or three at bedtime.

For chronic constipation, in women with uterine disorder :—

℞.	Aloës purificat.	gr. ij;	or	12 Gm.	
	Ferri sulphat.				
	Terebinth. alb., āā	gr. j;	"	06 "	M.

Ft. pil. sec. art.
S. Dose, one or two pills per diem.

Suppositories of aloes are used against ascarides.]

[ALTHÆA—MARSHMALLOW.

The root of Althæa officinalis, U. S.

Marshmallow is a demulcent, as it contains chiefly mucilage and starch. It is occasionally exhibited as a decoction in fevers, or inflammation of mucous membranes. In the form of a confection it is popular as a pectoral.]

ALUMEN—ALUM.

[*Aluminii et Ammonii Sulphas, U. S.*

Dose, gr. x to xx (.60 to 1.30 Gm.), or, as a purgative, gr. v to ʒj (.30 to .4 Gm.).

Alumen Exsiccatum. Dried alum.]

Local Action.

Physiological.	*Therapeutical.*
Alum, used externally, tends, like most astringents,	It is, therefore, much employed as an astringent lotion

---

[1] [This is a favorite preparation of the British Pharmacopœia. It contains aloes, licorice, carbonate of potassa, myrrh, saffron, and tincture of cardamom, and is gently cathartic.]

to contract the bloodvessels and condense the tissues by coagulation of their albumen.	in *conjunctivitis*, *leucorrhœa*, *gonorrhœa*, and as a gargle in sore throat. [Dried alum is a mild escharotic for exuberant granulations, etc.]

INTERNAL ACTIONS AND USES.

1. *On Nervous System.*—Alum seems to have some power in relieving spasmodic action.	1. It is, therefore, beneficial in some cases of *whooping-cough*, and in *colica pictonum*. [In *whooping-cough* it is given in small doses of gr. j–ij (.06 to .12 Gm.), in syrup and water several times daily. It is also one of the best direct emetics in *croup*. Dose, ʒss (2. Gm.), repeated every half hour if necessary.]
2. *Circulation.*—This, no doubt, is intimately connected with No. 1, as the contraction of the bloodvessels and internally astringent effects which follow the use of alum are probably dependent on nervous influence.	2. Alum has been used for internal *hemorrhage*, and to check *excessive sweating*, and its action in *whooping-cough* is also largely due to its astringent properties, as it is most useful in the later stages, when profuse secretion has been established.
3. *On Secretion.*—Alum occasionally acts both as an emetic and a purgative.	3. This also explains its use in *colica pictonum*.

USE.

In lotion, gr. ij ad x, or :—

℞.	Aluminis	gr. x ;	or	60	Gm.	
	Aquæ rosæ	f℥iv ;	"	128	"	M.

Lotion in *catarrhal ophthalmia*.

℞.	Aluminis	ʒij ;	or	8	Gm.	
	Acidi sulphurici dil.	fʒj ;	"	4	"	
	Syrupi limonis	f℥j ;	"	32	"	
	Aquæ	f℥iij ;	"	96	"	M.

S. Capiat cochleare magnum secundâ quâque horâ.

In *colica pictonum*.

[Dried alum may be given in pill, gr. ij (.12 Gm.), in *hæmoptysis*.]

[ALUMINII ET POTASSII SULPHAS.

Potassa-Alum, U. S.]

[ALUMINII SULPHAS.

Sulphate of Aluminium, U. S.

The potassa-alum has the same medical properties as the officinal alum, just considered, and, in fact, was the Alumen of the Pharmacopœia in the edition of 1860.

The sulphate of aluminium is antiseptic and astringent. It is sometimes employed as an injection in gonorrhœa and leucorrhœa. It has also been used to fill carious teeth, and in solution is employed to inject and preserve subjects for dissection.]

[AMMONIACUM—AMMONIAC.

A gum-resinous exudation from Dorema Ammoniacum, U. S.

OFFICINAL PREPARATIONS, U. S.

Mistura Ammoniaci. Dose, f℥ss (16. Gm.).
Pilulæ Scillæ Compositæ. Dose, pills j–ij.
Emplastrum Ammoniaci.
Emplastrum Ammoniacum cum Hydrargyro.

INTERNAL EFFECTS.

Ammoniac may be used in *chronic bronchitis* with defective secretion, but its systemic influence is not very evident. It is given in substance (dose gr. x–xxx) or rubbed up with water so as to form the Mistura Ammoniaci, or milk of ammoniac. The pills (each containing squills gr. ss, ginger and ammoniac, āā gr. ij with soap) are expectorant and stimulating. The plasters are resolvent and mildly counter-irritant, being useful in enlarged joints and scrofulous tumors.]

AMMONIA—AMMONIA.

[OFFICINAL PREPARATIONS, U. S.

Aqua Ammoniæ Fortior. (About 26 per cent. of Ammonia.)

Aqua Ammoniæ. (About ten per cent. of Ammonia.)

Linimentum Ammoniæ. (Aq. Ammon. $\frac{1}{3}$, oil $\frac{2}{3}$.)

Liquor Ammonii Acetatis. Dose, f℥ss–j (16. to 32. Gm.).

Spiritus Ammoniæ. Dose, ♏x–xv (.60 to 1. Gm.).

Spiritus Ammoniæ Aromaticus. Dose, fʒss–j (2. to 4. Gm.).

Tinctura Guaiaci Ammoniata. Dose, fʒj (4. Gm.).

Tinctura Valerianæ Ammoniata. Dose, fʒj–ij (4. to 8. Gm.).

Alumen. Dose. gr. j–ij, or gr. x–ʒij, as an emetic.

Ammonii Benzoas. Dose, gr. x–xx (.60 to 1.30 Gm.).

Ammonii Bromidum. Dose, gr. x–xv (.60 to 1. Gm.).

Ammonii Carbonas. Dose, gr. x (.60 Gm.), as an emetic gr. xxx (2 Gm.).

Ammonii Chloridum. Dose, gr. v–xx (.30 to 1.30 Gm.).

Ammonii Chloridum Purificatum. Dose, gr. v–xx (.30 to 1.30 Gm.).

Ammonii Iodidum. Dose, gr. v–x (.30 to 1.30 Gm.).

Ammonii Nitras (used in making Nitrous Oxide).

Ammonii Sulphas (used in making Ammonio-ferric Alum).

Ammonii Valerianas. Dose, gr. ij–v (.12 to .30 Gm.).

Cuprum Ammoniatum. Dose, gr. $\frac{1}{4}$–$\frac{1}{2}$ (.01 to .03 Gm.).

Ferri et Ammonii Citras. Dose, gr. v–x (.30 to .60 Gm.).

Ferri et Ammonii Sulphas. Dose, gr. iij–x (.18 to .60 Gm.).

Ferri et Ammonii Tartras. Dose, gr. x–xxx (.60 to 2. Gm.).

Hydrargyrum Ammoniatum, used in ointment.]

POISONING.

If given in large quantities, ammonia may cause death by inflammation of the stomach and intestines; and, according to Richardson, it may also kill by dissolving the red corpuscles of the blood.

[ANTIDOTES.

Vegetable acids and demulcents. The fixed oils may be administered, and the usual after-treatment instituted for poisoning by the caustic alkalies.]

LOCAL ACTION.

Physiological.	*Therapeutical.*
The stronger preparations of ammonia are irritating to the skin, causing redness and speedy vesication on account of their power of dissolving the cuticle.	Ammonia is, therefore, a component part of many stimulating liniments, and is an excellent counter-irritant and vesicant. It is a good application to the sting of insects or the bite of poisonous snakes.
Chloride of ammonium, on the other hand, is rather soothing, and cools the skin by aiding the speedy evaporation of fluids.	Chloride of ammonium used to be an invariable ingredient in evaporating lotions.
The vapor of ammonia is stimulant and irritating.	Ammonia is used by inhalation in *syncope*, and as an aid in the restoration of persons poisoned by prussic acid; but care must be taken not to allow its vapor to enter the air-passages too freely during unconsciousness, or serious inflammation may be produced.

CONSTITUTIONAL ACTIONS AND USES.

I. *On Brain and Nervous System.*—The preparations of ammonia, generally speaking, are stimulant in their action, affecting, however, rather the ganglionic and spinal systems than the brain	I. Ammonia in its various preparations is very largely used as a stimulant in many cases of exhaustion and debility. It is the best means of combating the depressing influence of *snake-bite;* it is

proper, and thus differing from alcohol.

Chloride of ammonium has, according to Anstie, the property of giving increased tone to sensory nerves.

II. *Circulation and Respiration.*—Ammonia increases the force and frequency of the heart's action, this explaining some part of its stimulating influence. It may also aid the respiratory power by giving tone to the muscular fibres surrounding the bronchial tubes, and simulating the respiratory centre.

When injected into the blood, ammonia has the power of dissolving the red blood corpuscles [possibly, to a moderate extent. But the chief source of danger after intra-venous injection lies in its power of interfering with the function of the blood-cell as an oxygen-carrier. In

invaluable in *bronchitis*, *pneumonia*, and all *typhoid conditions*, being more diffusible and less stupefying than alcohol; whilst in *prussic-acid poisoning* it may be administered internally as well as externally.

Chloride of ammonium is very serviceable in many cases of *neuralgia*, and in those wearing muscular pains in hard-worked women and others usually described under the term *myalgia*. [Ammonium bromide has been highly recommended in acute rheumatism in doses of gr. xx–xxx, three or four times daily.]

II. It is therefore a very generally used stimulant in acute disease.

It has therefore been used with success by Richardson in those cases where, as after delivery, *diphtheria*, *ovariotomy*, etc., a clot is forming in the heart, and he recommends it by injection into the veins, stopping short of solution of the red corpuscles.

cases of fatal ammonia poisoning the blood, after death, is found to be dark and to contain very little oxygen, nor will it absorb the gas and become arterialized when agitated in an atmosphere of pure oxygen. The red blood-corpuscle is also found to be altered and to show unusual resistance to the action of acetic acid.] And it is also supposed to diminish the coagulating property of the blood and to assist in the solution of fibrinous concretions already formed.

III. *On Secretion.*—Under this head it may be convenient to place—

1. The *emetic* action which is specially developed by large doses of carbonate of ammonia. This effect is also produced by injection into the blood.

2. Ammonia increases the secretion from the bronchial mucous membrane.

3. *Intestinal.* — Ammonia in large doses increases the secretion from the intestines, and may cause diarrhœa, and it also neutralizes acid secretions.

4. *Cutaneous.*—Ammonia, more especially in the form

1. Carbonate of ammonia is used as an emetic to assist in clearing the air-passages from accumulated mucus, and in some cases of poisoning.

2. This, in addition to the stimulant action, explains the great power of ammonia over *bronchitis* in the weak, young, or aged, and the later stages of *pneumonia*, where it promotes expectoration by thinning and rendering the sputa less tenacious.

3. It is never used as a purgative; but this irritating action on the bowels may render it an undesirable form of stimulant in enteric fever. It is a useful antacid.

4. Liquor ammonii acetatis is one of our best dia-

of liquor ammonii acetatis, acts freely on the skin.

5. *Urinary.*—No special action.

phoretics in a great variety of feverish conditions.

Finally, ammonia has been employed under various conditions which cannot conveniently be grouped under any precise physiological heading; but these we will consider when we refer *seriatim* to the various preparations of the drug.

MODE OF ELIMINATION.

Ammonia is very rapidly given out from the system, principally by the urine, but also in lesser degree by the breath and sweat.

PREPARATIONS.

Liquor ammoniæ fortior [Br.] and liquor ammoniæ [Br.]. These are seldom used internally, but occasionally as mentioned above, by vapor and injection. Dr. Halford, of Australia, has also proposed the employment of ammonia in this way to neutralize the poison of snake-bites; but, unfortunately, wider experience has not confirmed the promise of his earlier researches. Dose by injection, from 10 to 20 minims.

Ammonii carbonas. This is the most active and efficient preparation, used as a stimulant in doses of from 3 to 10 grs., as emetic 30 grs. Some authors have looked upon ammonii carbonas as a specific for *scarlet fever*, but of the soundness of this view no sufficient evidence has been produced. It is nauseous and pungent, and must be well disguised, milk being a good vehicle.[1]

℞. Ammonii carbonatis	gr. xl;	or	2	50 Gm.
Tincturæ scillæ	f ʒij;	"	8	"
Syrupi tolutani	f ʒiij;	"	12	"
Decocti senegæ	f ℥vij;	"	224	"

Misce, fiat mistura.

S. Capiat unciam unam quartâ quâque horâ.

Stimulating expectorant.

Spiritus ammoniæ aromaticus contains nutmeg, lemon, and spirit in addition to the ammonia. [This is an agreeable preparation either for inhalation or internal administration.]

---

[1] [Carbonate of ammonia must not be prescribed in combination with syrup of squill or syrup of garlic, as they contain acetic acid.]

Ammonii chloridum. Used as a tonic in neuralgia, in doses of from 20 to 30 grs.; but it is very nauseous, resembling sea-water in flavor. [It is also a common addition to expectorant cough mixtures.]

℞. Ammonii chloridi	ʒij;	or	8	Gm.	
Ext. glycyrrhizæ	℥ss;	"	16	"	
Syrupi tolutani	f℥j;	"	32	"	
Aq. cinnamomi	ad f℥viij;	"	256	"	M.

S. Capiat unciam unam quartis horis.

In *neuralgia*, or *bronchitis.*

It has also, but with little real foundation, been supposed to possess some power of aiding the absorption of lymphatic and glandular enlargements, and has been regarded as a good remedy in chronic liver disease.

Ammonii bromidum seems to have an occasional and uncertain influence over *whooping-cough*, and is thought by some to be a good substitute for bromide of potassium in *epilepsy* and other nervous disorders.

Liquor ammonii acetatis and liquor ammonii citratis [Br.] are diaphoretic in doses of from fʒij to f℥j (8 to 32 Gm.).

℞. Liq. am. acetatis	f℥ij;	or	64	Gm.	
Syrupi limonis	f℥j;	"	32	"	
Sp. ætheris nitrosi	fʒiij;	"	12	"	
Infusi serpentariæ	ad f℥viij;	"	256	"	M.

S. Cap. f℥j quartis horis.

Diaphoretic mixture.

Ammonii benzoas, ammonii nitras, and ammonii phosphas [Br.] are seldom if ever used.

AMYGDALA—ALMOND.

[**Amygdala Amara.** The kernel of the fruit of Amygdalus Communis, variety amara, U. S.

Amygdala Dulcis. The kernel of the fruit of Amygdalus Communis, variety dulcis, U. S.

OFFICINAL PREPARATIONS, U. S.

Mistura Amygdalæ (used as a vehicle).

Oleum Amygdalæ Amaræ. Dose, gtt. $\frac{1}{4}$ (.01 Gm.), in emulsion.

Oleum Amygdalæ Expressum (from A. dulcis).

Aqua Amygdalæ Amaræ. Dose, f℥ss (16. Gm.).

Syrupus Amygdalæ (Orgeat syrup). Dose, fʒj to ℥ss (4 to 16 Gm.).

Unguentum Aquæ Rosæ (from oil of sweet almonds).

ANTIDOTES.

The antidotes to poisoning by the preparations of bitter almonds are the same as those of hydrocyanic acid.]

The bitter almond, being uncertain and dangerous, is never used in medicine; but sweet almonds, in the form of the mixture or powder, are of value as agreeable vehicles for the mixture or suspension of other drugs, and Dr. Pavy has taken advantage of their nutritive properties to propose them as a substitute for bread in saccharine diabetes.

[The effects of the oil of bitter almonds upon the system are identical with those of hydrocyanic acid, upon the presence of which its activity depends, but it is about four times the strength of the officinal Acidum Hydrocyanicum Dilutum. Bitter almond water, and the syrup, are used as vehicles for cough mixtures.]

AMYLUM—STARCH.

[*The feculum of the seed of the Triticum vulgare, U. S.*

Starch is used medicinally as an antidote to iodine, and as a demulcent in corrosive poisoning. In the form of a dusting powder it is applied to the skin of infants to prevent chafing and excoriation. It also makes a bland poultice.]

Starch is a demulcent, used with advantage to some irritable conditions of skin in the form of the glycerine of starch, and also as a medium for enemata.

ANGUSTURA—ANGUSTURA BARK.

[*The bark of Galipea officinalis, U. S.*]

Cusparia is a light tonic, rarely used. [It has fallen into disrepute, from the fact that it was occasionally found to be accidentally adulterated or mixed with nux vomica bark.]

ANISUM—ANISE.

[*The fruit of Pimpinella Anisum, U. S.*

OFFICINAL PREPARATIONS, U. S.

Aqua Anisi. As a vehicle.
Oleum Anisi. Dose, gtt. v–xv (.30 to 1. Gm.).
Spiritus Anisi. (Oil f℥j in Oj.)

Anise is carminative and stomachic, and is a favorite flavoring ingredient in medicines for children.]

Anise, Fennel, Coriander, Caraway, and Dill are agreeable aromatics, stomachics, and carminatives.

ANTHEMIS—CHAMOMILE.

[*The flowers of Anthemis Nobilis, U. S.*

OFFICINAL PREPARATIONS, U. S.

Infusum Anthemidis. Dose, f℥ij (64 Gm.) as a tonic; as an emetic *ad lib.*

Oleum Anthemidis. Not officinal. Dose, gtt. v–xv (.30 to 1 Gm.).

An agreeable aromatic; in small doses it is drunk as a tonic, and in large doses the hot infusion is taken as an emetic. A poultice is sometimes made of the boiled flowers.]

Chamomile has usually been considered a substance of no special therapeutic interest, being principally used by country people in the form of infusion as a remedy for *dyspepsia;* but within more recent years various German authorities, quoted by Phillips, have stated that the oil has a powerful lowering action on the reflex irritability of the spinal cord, and have proposed its use in cases of strychnia poisoning.

ANTIMONIUM—ANTIMONY.

[OFFICINAL PREPARATIONS, U. S.

Antimonii Sulphuretum—the purified tersulphide (used in making the oxide).

Antimonii Oxidum. Dose, gr. ij–iij (.12 to .20 Gm.).

Antimonii et Potassii Tartras. Dose, gr. $\frac{1}{12}$ to j (.005 to .06 Gm.).

Antimonium Sulphuratum (sulphurated antimony). Dose, gr. j–xx (.06 to 1.30 Gm.).

Antimonii Oxysulphuretum (Kermes mineral). Dose, gr. ss–j (.03 to .06 Gm.).

Pilulæ Antimonii Compositæ. (6 grs. of the mass contain 1 gr. each of calomel and sulphurated antimony.) Plummer's Pills.

Vinum Antimonii—(Tartar emetic, gr. ij ad f℥j). Dose, gtt. x (.60 Gm.); as an emetic, fʒj (4 Gm.).

Emplastrum Antimonii (Tartrate of Antimony and Potassium, 1 part in 4).

Unguentum Antimonii (Tartrate of Antimony and Potassium, 1 part to 4).

Syrupus Scillæ Compositus (contains Tartar Emetic gr. j in ℥j).

Metallic antimony is not regarded as a poison; but its vapor is said to cause unpleasant symptoms when respired.

Antimony, Tartarized, generally known as Tartar Emetic, is an irritant metallic poison.

Symptoms of Poisoning.

Nausea and severe vomiting, hiccough, cardialgia, burning heat at the epigastrium, severe colic and purging, small and rapid pulse, cold skin, syncope, difficult respiration, vertigo, insensibility to external stimulants, painful cramps in the lower extremities, and great prostration of strength.

Morbid Appearances.

The stomach and intestines often much inflated with gas; their mucous membrane red, and covered with a slightly adhering viscid layer; the peritoneum of a dark brick-red hue; the membranes of the brain displaying marks of inflammation.] Death may occur from the collapse following prolonged vomiting and purging, or may be the result of gastro-intestinal inflammation. Post-mortem examination of a protracted case generally discovers parenchymatous degeneration of the liver and other internal organs.

[Tests.

In a solid state, add charcoal, introduce into a test-tube and expose to heat; metallic antimony will be deposited, of a grayish-black lustre. In solution, diluted nitric acid causes a white precipitate. Sulphuretted hydrogen throws down a reddish-orange precipitate. Tannin causes a copious, curdled, whitish-yellow precipitate. Should matters from the stomach be present, the solution must be well agitated with a small portion of muriatic and tartaric acid, and filtered previous to being experimented upon.

TREATMENT.

Encourage vomiting by free administration of warm water and other diluents, or employ the stomach-pump, if necessary. Infusions, tinctures, or extracts, containing tannin, are very useful by decomposing the poison. Give tea, coffee, and stimulants.]

LOCAL ACTION.

Physiological.	*Therapeutical.*
Externally applied, tartar emetic causes redness and inflammation of the skin, followed by an eruption of papules becoming vesicular, and finally forming pustules closely resembling those of small-pox.	Tartar emetic used to be extensively employed in the form of ointment as a counter-irritant, but was found occasionally to cause inflammation, and to leave unsightly scars.

INTERNAL ACTION AND USES.

I. *Brain and Nervous System.*—Tartar emetic under certain conditions, and more especially when combined with opium, exerts a sedative influence on the brain. When given in poisonous doses, paralysis, probably of spinal origin, and attended with diminished reflex irritability, sets in.	I. Its use was originally recommended by Graves, and has been endorsed by Murchison, in the violent delirium of *typhus*, and it has also been employed with benefit in *delirium tremens.*
II. *Circulation and Respiration.*—Antimony is sedative in its operation on the heart and vascular systems,	II. The depressing influence of tartar emetic on the circulation caused it to be very generally used in former

the hearts's action becoming slow, weak, and finally irregular, the arterial tension lowered, and the pulse soft and compressible. The respiration also grows slower, and an increased secretion takes place from the bronchial mucous membrane.

General muscular relaxation is observed.

III. *On Secreting Organs.* 1. *Stomach and Intestines.*—Antimony is an effectual emetic, its action being slow, however, and attended by a good deal of depression. It acts either when swallowed, or by subcutaneous injection; but the balance of experiment goes to show that in either case the effect is produced by reflex action following irritation of the nerves of the stomach. Some increase of secretion from the intestines

years in acute inflammations, and more especially *pneumonia;* but this practice has now been almost generally abandoned, as it was found that such treatment, whilst exerting no real influence over the course of the disease, tended to reduce the strength of the patient, and cause lingering convalescence. Small doses, however, are found useful in *croup* [when not diphtheritic], and in the *bronchopneumonia* of children where great dyspnœa and fever exist with excessive bronchial secretion; and it is a good general expectorant in *asthma,* [the first stage of] *bronchitis,* etc.

Its relaxing effects on the muscular system were formerly taken advantage of for the reduction of *herniæ* and *dislocations;* but it has of course been quite superseded by chloroform and other anæsthetics.

1. Antimony is too slow and depressing an emetic to be used in cases of poisoning, but it is of service in *croup, whooping-cough, bronchitis,* etc., where we wish to relax the bronchi and get rid of accumulated secretions.

In former years, when antimony was freely given, what was called tolerance used to be an interesting therapeutic result. This is to say, in feverish conditions, it was

and consequent diarrhœa are occasionally observed.	found that large quantities of the drug might be taken without producing vomiting; and this has been explained by the observation that antimony, to act as an emetic, must previously be dissolved in the gastric juice, a secretion which is in great measure checked during fever. Gubler explains the tolerance more simply, by suggesting that the system is too weak to carry out the energetic series of actions causing vomiting.
2. In poisonous doses antimony causes irritation and inflammation of the stomach and intestines.	
3. *Skin.*—Antimony has a powerful diaphoretic action.	3. Antimonial wine is a common adjunct to diaphoretic mixtures. It has been used in small doses with good result in psoriasis from its chemical relationship with arsenic.

COMMONLY USED PREPARATIONS.

Antimonium tartaratum (Br. P.). [Antimonii et Potassii Tartras.] Dose, $\frac{1}{16}$ gr. to $\frac{1}{4}$ gr.; as emetic, 1 to 3 grs. (.004 to .2 Gm.). In the bronchitis of children, from $\frac{1}{60}$ gr. to $\frac{1}{10}$ gr. (.1 to .3 Gm.).

Vinum Antimonii. Dose, 15 to 40 minims.

Ung. Antimoni tartarati. [Unguentum Antimonii, U. S. P.]

Pulvis Antimonialis. This is the patent preparation known as James's powder, which used to be more popular than it is now.

None of the other preparations of antimony have any special therapeutic value.

MODE OF ELIMINATION, ETC.

Tartar emetic rapidly enters the blood, and is eliminated by the bile, milk, sweat, and urine, as well as the gastro-intestinal glands.

FORM OF ADMINISTRATION.

Tartar emetic, on account of its tastelessness, may be well given dissolved in simple distilled water; and Ringer tells us, and I have amply confirmed his statements, that we may do much good, in some forms of acute bronchitis in children, by dissolving a grain of the salt in a pint of water, and giving a teaspoonful every quarter of an hour for the first hour, and then hourly.

In the case of adults, when we wish to avoid the nauseating effects of the drug, we may best do so by the following formulæ:—

℞.	Antimonii et potassii tart.	gr. ij;	or		12	Gm.	
	Acidi hydrocyanici diluti	♏xxx;	"	2		"	
	Spiritus lavandulæ comp.	f℥ss;	"	16		"	
	Aquæ destillatæ q. s. ad	f℥vj;	"	192		"	M.

Dose, f℥ss quartis horis.[1]

℞.	Liq. opii sed.[2]	fʒj;	or	4		Gm.	
	Antimon. et potass. tart. gr. j ad	gr. ij;	"		06	"	
	Aquæ camphoræ	f℥vj;	"	192		"	M.

S. Sumat semiunciam omni horâ donec somnus supervenerit.

Highly recommended by Graves and Murchison in the insomnia and delirium of *typhus fever*.

[Tartar emetic in broken doses is very useful in acute pneumonia, from its action on the skin as well as on the respiratory centre. The following formula has been used in Philadelphia for a number of years, having been introduced by the late Dr. Pepper, one of the physicians to the Pennsylvania Hospital:—

℞.	Antimonii et potassii tart.	gr. $\frac{1}{2}$;	or		03	Gm.	
	Pulv. digitalis	gr. x;	"		60	"	
	Pulv. ipecac. comp.	gr. xl;	"	2	60	"	M.

Ft. chart. no. xx.

S. Capiat unam secundâ quâque horâ.

---

[1] [Each dose contains two and one-half minims of dilute hydrocyanic acid. This being the case, the first dose should not exceed fʒj; to be cautiously increased.]

[2] [Battley s solution, non-officinal. It is about twice the strength of laudanum.]

AQUA—WATER.

[*Natural water in the purest attainable state, U. S.*

Aqua Destillata. Distilled water.]

Water, both in its external and internal applications, enters so largely into medical practice as well as into domestic economy, that we cannot begin our studies better than by considering very briefly what is definitely known regarding its physiological and therapeutical properties.

[Water being the universal solvent is not found pure in a natural condition, but is more or less impregnated with saline or organic matters, and always contains in solution more or less solid, liquid, or gaseous impurities. Pure water boils at 100° (212° F.) at the level of the sea; if it contain much foreign matter, its boiling point may be raised. *Mineral* waters are those which permanently contain an unusual quantity of saline substance in solution. *Hard* water contains carbonate or sulphate of lime and magnesia; the former being remediable by boiling is called *removable hardness*, while the latter is *permanently hard.* Hard water will not make a lather with the ordinary alkaline soap, but simply curdles, because the lime combines with the fatty acids and is precipitated. This is the basis of division of water into *hard* and *soft;* spring and well water are often hard; rain and river water are usually soft.

The following classification of water is furnished by the Rivers Pollution Commissioners in their sixth report, etc. :—

I. In respect of wholesomeness, palatability, and general fitness for drinking and cooking—

Wholesome	1. Spring water	Very palatable.
	2. Deep well water	
	3. Upland surface water	Moderately palatable.
Suspicious	1. Stored rain water	
	2. Surface water from cutivated land	Palatable.
Dangerous.	1. River water, to which sewage gains access	
	2. Shallow well water	

II. According to softness—

1. Rain water.
2. Upland surface water.

3. Surface water from cultivated land.
4. Polluted river water.
5. Spring water.
6. Deep well water.
7. Shallow well water.

III. In respect of the influence of geological formation in rendering water sparkling, colorless, palatable, and wholesome by percolation, the following water-bearing strata are given as most efficient—

1. Chalk.
2. Oolite.
3. Green sand.
4. Hastings sand.
5. New red and conglomerate sandstone.][1]

Baths and External Applications.

It will be found difficult, if not impossible, to balance the physiological and therapeutical actions of water in the manner followed generally throughout this work, and we shall therefore give a short collective sketch of the influence exerted by it on the various functions of the body.

It is not necessary for us to do more than refer to the universal use of water for washing and bathing purposes, but a word or two on the physiological effects of cold baths is required. We find that the action of the heart is increased, the respiration may become panting and irregular, the temperature falls, and the destructive metamorphosis of muscular tissue is augmented, as indicated by an increased excretion of urea; occasionally albumen appears in the urine, and so much mental shock is produced, more especially by sea-bathing, as to render this usually excellent tonic unadvisable in those of feeble or hysterical constitution, in the very young and old, and in pregnant or menstruating women, whilst the tendency to vascular strain must prescribe caution towards those in whom we have any reason to suspect aneurism or a degenerated state of the arterial system.

Occasionally, during sea-bathing, the hair falls off, the process of digestion becomes impaired, and sleeplessness is experienced; and this, no doubt, arises from the process of tissue destruction not being thoroughly balanced by repair.

---

[1] [Given by Wilson, in his "Handbook of Hygiene," Am. ed., Philada., 1877, pp. 141–142.]

As regards the external uses of cold water in medical practice, we may refer to the beneficial action of water-dressing and irrigation in surgery, to cold affusion in *laryngismus stridulus*, *cholera*, *hysteria*, the stupor of fevers and drunkenness, and, most of all, to the wonderful refrigerant action of cold baths in cases of abnormally high temperatures.

It is generally held that a fatal result almost inevitably occurs in any case where the bodily temperature remains above 107° for several days at a time, and until very recently we were powerless to check the destructive influence of this complication. Within the last few years, however, Drs. Wilson, Fox, and others have shown that we may safely and effectually bring down this excessive heat in *rheumatism*, where it principally occurs, by placing the patient in a bath at 95° and gradually adding cold water or ice until 60° Fahr. is reached. In this way a reduction of from seven to twelve degrees may be readily effected, but we must remember one practical point, that the patient's temperature continues to fall, as much even as six degrees, for forty or fifty minutes after he has been removed to bed, in consequence of the primary contraction of the vessels of the skin, due to the fever and the cold water, being succeeded by relaxation and consequent irradiation of heat (Binz). Four or five baths may be required during the first day of treatment, the patient remaining immersed during twenty or thirty minutes. There can be no doubt that by watching our cases of rheumatism carefully, and adopting this mode of treatment whenever the thermometer registers more than 105° Fahr., we may save many lives. We may remember that the lowering effect is in inverse proportion to the weight of the body, and that the best effects are produced at the time when the temperature has a tendency to sink spontaneously, as from seven in the evening till morning, and again from 11 to 2 in mid-day. We must beware of collapse, which is no imaginary danger, and must be met by stimulants.

The Germans use the cold bath very freely in all febrile disorders. Liebermeister keeps his patients in the water for even two hours in severe cases; but there is no evidence that their success is greater than under the treatment pursued in this country, which has the merit of being agreeable to the feelings of the sufferer.

Cold packing is an excellent stimulant to the skin; it is useful as a less effectual but more agreeable mode of using antipyretic treatment, and is of service in acute eruptive disorders, when the rash tends to recede; and is extensively employed at our hydropathic establishments.

Warm water is also very serviceable, and we may mention the soothing action of warm fomentation, the warm *douche* in early joint disease, and the use of the warm bath in the convulsive diseases of children, for the relief of colic, spasmodic stricture, hernia, gall or renal calculi, and in cases of extensive burns or moist skin diseases, employed after the manner of Hebra, whose patients frequently remain in a state of continuous soaking for days together.

Ice is a most valuable application for relieving pain and checking inflammation in *orchitis*, *bubo*, *meningitis*, etc., as well as for the arrest of hemorrhage, and to allay thirst and obstinate vomiting; and introduced into the rectum it produces some antipyretic action.

Vapor is often used as a soothing and relaxing application in *tonsillitis*, *bronchitis*, *croup*, etc., and, in the form of bath, to cause diaphoresis.

CONSTITUTIONAL ACTION.

When water is taken internally, it acts in some measure as a purgative by supplying moisture to the feces; it promotes digestion by stimulating the secretion of gastric juice, and aiding the passage of peptones into the blood (Ringer); and it is in some measure a diuretic, increasing temporarily the excretion of chloride of sodium, and more permanently the elimination of urea, phosphoric and sulphuric acids by the urine. It is, of course, the universal solvent, and its importance in the animal economy is shown by the fact that it constitutes about sixty-eight of the hundred parts which build up our entire bodily frame, and that five pints are given out from the body of one average-sized adult in the twenty-four hours. The urgent necessity for its purity is further proved by the leading part it has always taken in the spread of epidemics; for not only cholera, but enteric fever, has thus been largely propagated, whilst entozoa are thus introduced into the system, and the presence of other impurities may give rise to dysentery, diarrhœa, goitre and yellow fever. [The most dangerous adulteration of drinking water is that occasioned by the presence of decaying organic or albuminoid matter. During epidemics of bowel affections, all water should be boiled previous to drinking.] Specific adulterations also, like lead, have frequently occasioned very painful and even fatal attacks of illness.

But we may derive great benefit in practice from the use of some of those very impure waters, deeply impregnated with various mineral ingredients, which are known as mineral waters, and which are met with in such profusion and variety both at home and abroad. Fashion, no less than undoubted success attending their use, has now brought these naturally adulterated waters prominently forward, and it is very esssential that every practitioner should have some knowledge of their chief constituents and the principal health resorts where they can be partaken of in greatest perfection. Our present limits, however, will only permit a very bare enumeration of the principal classes into which mineral waters have been divided.

1st. We have the chalybeate or ferruginous class, which contains iron in varying proportion, in the form either of carbonate held in solution by carbonic acid gas, as at [Excelsior Rock Spring, Saratoga] Spa, Tunbridge Wells, and Harrowgate; or of sulphate, as at [Bedford Springs, Pa., Fairmount Park, Phila.] Brighton, Isle of Wight, etc. Some are hot and some cold, and some, as Monte Doré, contain a minute quantity of arsenious acid. They are possessed of tonic properties, and are very useful in cases of anæmia, chlorosis, struma, and other conditions of debility; and whilst as carbonate we generally find them well borne, we must be cautious of their use in very plethoric and full-blooded patients.

2d. Acidulous or carbonated. These are agreeable and sparkling, holding in solution carbonates of lime, soda, and magnesia. They are met with at [Gettysburg] Seltzer, and Carlsbad, and are serviceable in gout and dyspepsia.

3d. Saline, some of which are purgative by containing the sulphates of magnesia and soda, as at [Saratoga, Empire Spring] Cheltenham, Leamington, Friedrichshall, etc.; others, as Buxton, Bath, and Bristol, are impregnated with carbonate and sulphate of lime; others with chlorides, as Weisbaden, Baden-Baden; a fourth class contain iodine and bromine in combination with sodium and magnesium, as at Homburg, Kissingen, Woodhall, etc.; whilst a fifth class, as at Vichy and Ems, owe their properties to the alkaline carbonates which they contain. [Apollinaris and Hunyadi Janos waters belong to this class.] These waters are much used for their tonic and aperient action.

4th. Sulphuretted or hepatic waters contain sulphuretted hydrogen in solution, and possess a very offensive taste and smell. They are generally thermal, frequently having a high temperature. They are chiefly met with at Harrowgate, Moffat, Cheltenham, Aix-la-Chapelle [Virginia Sulphur Springs], Baréges, Eaux Bonnes, etc., and are principally used in chronic skin diseases, in chronic rheumatism and bronchitis, in advanced syphilis, and for the elimination of mercury.

Those patients who are unable to visit the different spas at home or abroad, may drink the bottled waters, or we may manufacture rough imitations by combination of the various ingredients. In prescribing saline purgatives, we should always remember the principle of very free dilution and frequently repeated small dose on an empty stomach; but, although we may often do great good by this mode of administration, we miss the change of air and scene, the early and regular hours, the simple diet, and the special faith and mental anticipation with which the chronic rheumatic and dyspeptic approach the health resort of their choice.

[Aquæ.

The class of MEDICATED WATERS in the U. S. Pharmacopœia includes the following:—

Aqua Acidi Carbolici
" " Carbonici
" Ammoniæ
" Ammoniæ Fortior
" Amygdalæ Amaræ
" Anisi
" Aurantii Florum
" Camphoræ
Aqua Chlorinii
" Cinnamomi
" Creasoti
" Destillata
" Fœniculi
" Menthæ Piperitæ
" Menthæ Viridis
" Rosæ.]

ARGENTUM—SILVER.

[OFFICINAL PREPARATIONS, U. S.

Argenti Cyanidum—for making Acidum Hydrocyanicum Dilutum for immediate use.

Argenti Nitras. Dose, gr. $\frac{1}{6}$–ij (.01 to .12 Gm.).

Argenti Nitras Fusa—Lunar Caustic, for external use.

Argenti Oxidum. Dose, gr. ss–ij (.03 to .12 Gm.), in pill.

ANTIDOTE.

The chemical antidote to nitrate of silver is table salt, which should be followed by an emetic or a purgative.

Metallic silver is inert. As it occasions no chemical irritation in the tissues, canulæ are made of it for use in *empyema* to wash out the chest, etc., and silver wire is also used in surgery to unite the fractured ends of bones where there is delayed union, and for sutures in wounds of the scalp and elsewhere. The salts of silver are best administered in pill form, for which gum Arabic is probably the best excipient, as with vegetable extracts, or glucose, they are apt to explode.]

LOCAL ACTION.

Physiological.	*Therapeutical.*
The nitrate of silver primarily hardens, but secondarily destroys, the cuticle, and condenses the tissues by coagulating their albumen.	Nitrate of silver, either in substance or solution, has been used to check the spread of erysipelatous inflammation; to arrest the pitting of *smallpox;* and to avert the formation of bed-sores.
Its application may cause ulceration of the healthy skin, and it is often used to check the activity of granulating surfaces.	It is a good injection for *gonorrhœa*, or collyrium for *conjunctivitis*, and a strong solution is one of our best remedies for various relaxed or ulcerated conditions of the fauces. In substance, lunar caustic forms a good application to simple venereal sores, ulcerated tonsils, or to any ulcerating or granulating tissue, when we wish to repress exuberant granulations or excite a new and more healthy action.

INTERNAL ACTIONS AND USES.

Silver nitrate is little employed internally. It formerly enjoyed a considerable reputation in the treatment of nervous disorders; but we do not now hold it in such high esteem. I have, however, found its cautious use to be of distinct service in those cases of epilepsy where bromide of potassium has lost its control over the disease. [In the treatment of the various forms of spinal sclerosis, especially locomotor ataxia, Dr. Seguin regards the salt as of great value, thus endorsing the views of Erb. He also uses it in myelitis. A quarter to half a grain may be given, before meals, three times daily, and continued for several months. He had never observed symptoms of argyria from its use in these doses.] For severe *gastralgia*, which has resisted other modes of treatment, nitrate of silver is undoubtedly a very effective remedy; and occasionally patients willingly run the risk of disfigurement in the hope of cure. In one case which I have had the opportunity of examining, the man was well pleased to have lost in three months his incessant pain at the expense of permanent staining, the bluish color being much deeper on the face, from the action of the light, and being almost invisible on the gums, throat, and conjunctivæ. [The oxide has been highly recommended as a nervous sedative, and has been used with good results in the treatment of *locomotor ataxia*. It is said, also, to act as a hæmostatic in menorrhagia.]

ARNICA—ARNICA.

[*The flowers of Arnica Montanum, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Arnicæ. Dose, grs. v–x (.30 to .60 Gm.).

Emplastrum Arnicæ (extract ½).

Tinctura Arnicæ (℥iij–Oj). Dose, gtt. x–xxx (.65 to 2 Gm.), well diluted.]

EXTERNAL ACTIONS.

If applied to the skin for some time, arnica causes redness and irritation, and in some susceptible subjects

Some practitioners value arnica highly for the power which they believe it to possess of absorbing bruises and most violent erysipelatous inflammation, even ending in death, has resulted. It must therefore be used with caution.

relieving sprains. Dr. Garrod, on the other hand, asserts that any power it seems to exercise in dispersing extravasations of blood is simply due to the spirit which the tincture contains. Dr. Phillips, again, tells us that the irritating effects never follow the use of an aqueous solution, which contains none of the arnicine or volatile oil.

Physiological.

[Prof. Bartholow sums up its action as follows: Increases flow of saliva; causes nausea and vomiting; even irritant poisoning may result; it increases secretion from mucous membranes. It rapidly diffuses into the blood, and in small doses acts as a stimulant, increasing the action of the heart, producing a general feeling of warmth throughout the body; it increases the secretion of the kidneys and the sweat glands. In larger doses the stimulating effect is shorter in duration, and is followed by vomiting, depression, or collapse. Death is caused by arrest of action of the heart.

Therapeutical.

Arnica has not been used much internally, but recent investigations show that it may well be employed as a cardiac stimulant in low grades of fever, in small doses, frequently repeated. In order to depress the temperature and action of the heart larger doses will be required. In *delirium tremens*, where restlessness is due to debility, small doses may be used, in mania, with high arterial excitement, large doses will be called for. It has also been recommended in a similar mode of employment in *acute rheumatism* and rheumatoid arthritis.

POISONING.

Poisonous doses cause dilated pupils, pain in the head, and stupor due to accumulation of carbonic acid in the blood. Atropia is the physiological antidote.]

Internal Actions.

The physiological and medicinal actions of arnica can only be balanced with difficulty, as the evidence regarding the former is very conflicting, and the opinions on the latter certainly err in the direction of over-confidence. As it is rarely, if ever, used as a medicinal agent save by homœopathic practitioners, it does not seem necessary to say more about its asserted virtues.

ARSENICUM—ARSENIC.

[Acidum Arseniosum. Sublimed arsenious acid in masses, U. S. Dose, gr. $\frac{1}{20}$.

Officinal Preparations, U. S.

Arsenici Iodidum. Dose, gr. $\frac{1}{8}$ (.008 Gm.).

Liquor Arsenici et Hydrargyri Iodidi (♏ xx contains arsenic gr. $\frac{1}{24}$). Donovan's solution. Dose, ♏ x (.60 Gm.).

Liquor Arsenici Chloridi. (Acid. arsen. gr. iv ad f℥j.) Dose, ♏ v (.30 Gm.).

Liquor Potassii Arsenitis. (Acid. arseniosum, gr. iv ad f℥j.) Fowler's solution. Dose, ♏ v (.30 Gm.).

Liquor Sodii Arseniatis. (Sodii arseniat. gr. iv ad f℥j.) Dose, ♏ v (.30 Gm.).

Sodii Arsenias. Dose, gr. $\frac{1}{12}$ (.005 Gm.).

Metallic arsenic is inert, and is not used in medicine. Arsenious acid is sometimes termed white arsenic, or, simply, arsenic, as in the following remarks. It is a corrosive poison.]

Poisonous Effects.

Poisoning by arsenic is ushered in by [a metallic taste in the mouth, salivation, nausea, fainting, great thirst, and a burning pain in the stomach, vomiting, diarrhœa. The stools are dark colored and very offensive, the urine scanty and high colored. The pulse is weak and often intermits; there is distressing palpitation of the heart, with labored respiration and cold sweats. There is prostration, sometimes paralysis, and] headache, fever, and disturbed sleep, followed by more acute symptoms and death from collapse—a train of symptoms much resembling those met with in cases of true cholera. [Such phenomena occurring in the absence of any epidemic of Asiatic cholera, and coming on soon after eating, in a previously healthy person, should excite suspicion of arsenical poisoning.]

After death, there will be the usual pathological appearances of gastro-enteritis [but without erosion or abrasion, and most marked in the stomach, duodenum, and the rectum. Sometimes there are few or no morbid appearances in these situations; for instance, where it has been administered in a vaginal injection. In some cases the gastro-enteric symptoms are not prominent, or are entirely absent, and the patient is found to have marked depression of the vital powers, and a progressive tendency to coma and collapse, showing that the force of the poison has been chiefly expended upon the nervous system. Recent researches have shown by chemical analysis a relatively larger proportion of arsenic in the nervous centres than in other tissues of the body.] Frequently we find fatty degeneration of the heart and muscles, and parenchymatous degeneration of the liver, kidneys, etc. [Arsenic may generally be detected in the liver, or contents of the stomach, by Reinsch's or Marsh's Test.

ANTIDOTES.

The chemical antidotes to arsenious acid are freshly prepared hydrated sesquioxide of iron, and magnesia freshly calcined. The solution of dialyzed iron is a convenient antidote for arsenical poisoning. When Fowler's solution has been taken the ferric salts are the antidotes.

TREATMENT.

Abundant draughts of sweet milk, gruel, decoctions of starch, or oily mixtures; tickling the fauces, etc., to induce vomiting; the stomach-pump; emetics of sulphate of zinc. Hydrated sesquioxide of iron, newly prepared, in large doses, or in the form of dialyzed iron, affords the only reliable antidote.

The magnesia may be used with advantage, until hydrated peroxide of iron can be procured. Having removed the poison by vomiting and purging, we afterwards combat any inflammatory symptoms by the usual means, and let the patient subsist, for a long time, wholly on the blandest diet.

TESTS FOR ARSENIC.

In the solid state it can be sublimed by heat. If mixed with charcoal, and heated in a suitable test-tube, deoxidated arsenic will be obtained in the form of a metallic coating inside the tube; and this may be reconverted into arsenious acid by urging it in various directions along the tube with the aid of a minute spirit-lamp flame; the facets of the crystals thus formed (on the cooler situations) will be seen in some places with the unassisted eye, but more distinctly by means of a four-power lens.

In solution, ammoniacal nitrate of silver produces a lemon-colored (*arsenite of silver*) precipitate. Ammoniacal sulphate of copper throws down a grass-green (*arsenite of copper*) precipitate. Transmission of sulphuretted hydrogen produces a bright yellow (*sulphide of arsenic*) precipitate. Lime-water precipitates a white (*arsenite of calcium*) powder, but this test is not one to be relied upon.

Marsh's Test.—Placed with zinc and diluted sulphuric acid in the hydrogen apparatus, the arseniuretted hydrogen thence arising, when lighted, will deposit metallic arsenic on a piece of glass held within the flame.

Reinsch's Test.—Acidulate the suspected liquid with muriatic acid, and boil copper wire or foil in it for ten minutes. The arsenic is deposited on the copper as a white alloy, from which it can be separated as arsenious acid, by subjecting the copper, cut into shreds, to a low red heat in the bottom of a small glass tube.

The precipitates referred to, if washed and dried, may be treated as directed above for arsenic in the dry or solid condition.

In testing suspected matters obtained from the stomach, these, and in cases of death, the viscera themselves, must be cut or broken up, and boiled during, at last, three-quarters of an hour; if not sufficiently fluid, add distilled water. Strain, add a small quantity of potassa, and again boil during a quarter of an hour, and filter. If this liquor manifest either alkaline or acid reaction, neutralize with potassa, or with acetic acid, as may be required; then acidulate it faintly with hydrochloric acid. The liquor may now be experimented on with the above tests.]

LOCAL ACTION.

Physiological.	*Therapeutical.*
Externally applied, arsenic causes redness and inflammation of the skin, followed by ulceration and sloughing. If we wish to use it as a caustic we must apply it freely to prevent bad results, remembering that if we produce inflammation of a part we check its absorptive powers. [It is considered safer to limit the application to a small surface at a time on this account.]	Arsenic has been employed as a caustic in *cancer* and allied diseases; but not only is its action difficult to regulate, but dangerous symptoms of poisoning have resulted from the very ready way in which it is absorbed by the skin. As a more gentle form of stimulant, however, it is of great service in some chronic skin diseases, such as lupus.

INTERNAL ACTIONS AND USES.

I. *On Brain and Nervous System.*—Arsenic has a tonic influence on the nervous system generally.	I. This may in some measure explain its antiperiodic properties, for it is well known that arsenic is only second to quinine in its power of arresting the various manifestations of *ague*. It is also a valuable remedy in *neuralgia*, and *chorea* may frequently be cured by full doses.
II. *Circulation and Respiration.*—In small doses arsenic may stimulate cardiac action in a slight degree; and the experience of the arsenic-eaters of Styria shows that its use improves their wind, and enables them to undergo great exertion without fatigue. This fact, which was formerly denied, has been placed beyond all doubt by the observations of Macla-	II. Arsenic is of service in *asthma*, *hay-asthma*, perhaps by calming irritability of the vagus, and some forms of *chronic bronchitis* and *chronic phthisis*, and has been found to act well by the inhalation of spray. The Monté Doré waters, so much recommended in asthma, are believed to owe their efficacy to the arsenic which they contain.

gan, who, after seeing an arsenic-eater consume his dose, detected the presence of the metal in the urine. Either arsenious acid or orpiment is used, and the largest dose is said to be 14 grains, 8 grains having been actually eaten in presence of a competent witness. It is stated, however, that only persons of strong constitution can bear this habit.

III. *On the Secreting Organs.*—1. *Digestive Tract.* In small doses arsenic stimulates the appetite and increases the digestive powers, but if used more freely symptoms of irritation set in, which may terminate in gastro-enteritis. [Some patients cannot take the smallest doses without great systemic disturbance. It is advisable to begin with minute doses and cautiously increase, watching the effect.]

III. Ringer recommends small doses of arsenic—1. In a form of *irritative dyspepsia* with red tongue and prominent papillæ, in the morning *vomiting* of drunkards, and in that variety of *diarrhœa* which leads to the evacuation of the bowels immediately after eating. That the nutrition of the skin is profoundly affected by arsenic, is proved by experiments which show that desquamation of the epidermis, and degeneration and partial solution of the protoplasm of the cells of the cutis vera, resulted in frogs poisoned with the drug. We may explain the success of arsenic in cutaneous disorders either by its influence on the nutrition of the cell-growth of the skin, or by its action on the nervous system, it being an undoubted fact that its curative powers are almost restricted to those diseases which are of neurotic origin.

Excellent though its effects frequently are, it will often prove disappointing, and will fail to cure the disease for which it is given. But in psoriasis, if we get the case early, and treat it regularly and rigidly, continuing the administration of the drug in small doses for some time after the eruption has disappeared, we may usually hope for good results, remembering that relapses are extremely common in this disease. Some authorities hold that in order to get full value from the use of arsenic, we must produce physiological symptoms, but my own experience is entirely opposed to this.

2. *Cutaneous.* — Arsenic occasionally causes irritation and tingling of the skin, and even the appearance of eczematous and occasionally herpetic eruptions.

2. In dry scaly affections of the skin, such as *psoriasis*, in the dry stages of *eczema* and *impetigo*, in *pemphigus*, and in *lichen*, arsenic acts most admirably; but we must be careful never to give it during the acute stage of any skin affection, as in these circumstances, it is invariably found to aggravate the symptoms. Arsenic is much valued by Balfour and others in *chronic rheumatism*, and more especially *rheumatoid arthritis.*

3. *Liver.*—Arsenic in poisonous quantities causes, like phosphorus, fatty or parenchymatous degeneration of the liver.

3. [Arsenic in small doses is a valuable stimulant to the hepatic tissue changes, and is useful in incipient *cirrhosis* and in certain forms of *intestinal indigestion.*]

4. *On Urine.*—Nothing special has been described [except that the kidneys and liver are the principal channels for the discharge of the poison from the circulation.]

4. Dr. Lauder Brunton records an interesting case in which arsenic cured albuminuria in a young man, due probably to imperfect pancreatic digestion of albumen.

MODE OF ELIMINATION.

Arsenic is rather slowly removed from the body by the intestines, the urine, and perhaps the bile and the skin. Traces have been found in the urine sixteen days after ingestion.

MODE OF ADMINISTRATION, CAUTIONS, ETC.

Persons vary much in their susceptibility to arsenic, and we must invariably begin its use with caution, keeping in mind that children bear it well, and that a child of five can bear with impunity as large a dose as an adult. [Two grains of arsenious acid have caused death, according to Dr. Taylor.]

We must also remember that, although the Styrian peasants can accustom themselves to large and increasing doses, the experience of medical practice shows that, after a certain time, patients taking this drug are liable to show some of the following symptoms: Smarting and itching about the conjunctivæ, with œdema, pain in the stomach, vomiting and diarrhœa, white tongue, and general digestive derangement; and when these indications of "accumulation" occur, it is not necessary to suspend the remedy altogether, but merely to diminish the dose.

The probabilities of these unpleasant symptoms are much lessened, however, by advising that the dose should always be taken after a meal.

The mode in which arsenic is usually given is in the form of liq. arsenicalis [Fowler's solution—Liq. Potass. Arsenitis, U. S.], which is merely a solution of arsenious acid in carbonate of potash flavored with sp. lavand. co., containing gr. ss in f℥j, and of which the dose is, as a general rule, from ♏ij to ♏v (.13 to .32 Gm.); but in some obstinate affections, like chronic rheumatic arthritis, it is requisite to push the quantity as far as ♏x or even ♏xv (.65 to 1. Gm.). In skin diseases I am strongly in favor of beginning with a large dose, and pushing the drug vigorously. Small doses seem more likely to provoke irritation than large. Being almost tasteless, liq. arsenicalis is best given simply in water.

The liquor arsenici chloridi, sodii arsenias, and ferri arsenias are rarely used; and the liquor arsenici et hydrargyri iodidi [Donovan's Solution], which was supposed to have a special influence over syphilitic skin diseases on acount of its combination of arsenic with iodine and mercury, has gone much out of fashion in these days. Dose, 10 to 30 minims (.65 to 2. Gm.). [The iodide of arsenic is sometimes used as an ointment in skin affections (gr. iij to ℥j.) Simple ointment with arsenious acid (gr. j to ℥j) has been highly recommended as an agreeable substitute for sulphur ointment in the treatment of *scabies.*]

℞.	Hydrargyri chloridi corrosiv.	ʒiiss	or	10		Gm.	
	Hydrargyri bisulphureti	gr. xl	"	2	60	"	
	Acidi arseniosi	ʒj	"	4		"	M.

S. To be made into a paste with a little water, and then applied with a brush.

Useful in cases of lupus.

℞.	Vini ferri	fʒj	or	4		Gm.
	Liq. potassii arsenitis	♏iij	"		20	"
	Syrupi aurantii corticis	fʒj	"	4		"
	Aquæ anethi	q. s. ad f℥j	"	32		"

Pro dosi.

Useful in eczema, psoriasis, etc.

ASSAFŒTIDA—ASSAFETIDA.[1]

[*A gum-resinous exudation, obtained by incision from the root of Narthex Assafœtida, U. S. Dose, gr. v–x* (.32 to .65 Gm.).

OFFICINAL PREPARATIONS, U. S.

Mistura Assafœtidæ (ʒiv to Oj). Milk of Assafetida. Dose, f℥ss–j (16 to 32 Gm.).

Tinctura Assafœtidæ (℥ij to Oj). Dose, fʒss–j (2 to 4 Gm.).

Pilulæ Assafœtidæ (each gr. iij). Dose, 2 to 4.

Pilulæ Aloës et Assafœtidæ (each gr. j$\frac{1}{3}$).

Pilulæ Galbani Compositæ (assafetida gr. $\frac{1}{2}$).

Suppositoria Assafœtidæ (each 5 grains, or ♏xv of the tincture).

Emplastrum Assafœtidæ.]

---

[1] Now usually spelt asafetida.

Physiological Action.	*Therapeutical.*
A good deal of digestive disturbance seems to follow the administration of this drug to healthy persons; but the evidence is too conflicting to enable us to lay down any exact scheme of its influence on the various functions of the body.	Assafœtida has been used and recommended in a considerable variety of affections, but practically it is now only prescribed in flatulent dyspepsia and in hysteria, where its excessively nauseous smell and taste are supposed to give it an advantage over other drugs of the same class.[1]

AURANTIUM—ORANGE.

[**Aurantii Amari Cortex.** The rind of the fruit of Citrus vulgaris.

Aurantii Dulcis Cortex. The rind of the fruit of Citrus aurantium.

Aurantii Flores. The flowers of Citrus aurantium and Citrus vulgaris.

Officinal Preparations, U. S.

Aqua Aurantii Florum. Used as a vehicle.
Syrupus Aurantii Florum. Used as a vehicle.
Confectio Aurantii Corticis. Used as a vehicle.
Syrupus Aurantii Corticis. Used as a vehicle.
Tinctura Aurantii. Dose, fʒj–ij (4. to 8. Gm.).

---

[1] Prof. H. C. Wood states that "assafetida is one of the most efficient of the so-called antispasmodics, and may be given to fulfil the same indications as valerian in *functional spasm*, in *hysteria*, and *nervousness*. It differs from valerian in having a much more decided action upon the mucous membranes. It is an excellent carminative, and in the form of injection is constantly used for the relief of *tympanites*. It also in small doses increases the appetite and affords relief in *dyspepsia*, with *flatulent colic* and *costiveness*, of the aged or hysterical. As a stimulating expectorant and antispasmodic, it is useful in *whooping-cough* and *chronic catarrh*. It is especially efficient in palliating the latter affection as occurring in old people, when the difficulty of breathing is paroxysmally increased by spasm of the bronchial tubes. In *infantile convulsions* and in severe infantile *colic*, assafetida enemata (ʒij to ℥ij of the milk) are exceedingly useful and harmless."—*Therapeutics*, 2d ed., p. 191.]

Infusum Gentianæ Compositum. Dose, f℥ss–ij (16. to 64. Gm.).

Tinctura Cinchonæ Composita. Dose, fʒj–ij (4. to 8. Gm.).

Tinctura Gentianæ Composita. Dose, fʒj–iv (4. to 16. Gm.).]

PROPERTIES.

The various preparations of orange require no detailed comment, for beyond the fact that those made from the rind are mildly tonic in virtue of their bitterness, and that the syrup and the orange-flower water are agreeable flavoring additions to a prescription, we have no evidence of their special therapeutic properties, if any exist. [The volatile oil of the flowers, obtained by distillation, is called, in commerce, oil of Neroli, and orange-flower water is hence sometimes termed Neroli water.]

[AVENÆ FARINA—OATMEAL.

The meal prepared from the seeds of Avena Sativa, U. S.

Extensively used as an aliment in the form of gruel. It is nourishing and slightly laxative. Three varieties are met with in this country, the Ohio, the Canadian, and the Scotch oatmeal; the latter, being imported, brings a higher price, and is considered by some to be better, perhaps solely on that account. Thin oatmeal gruel, strained and sweetened, forms a valuable and popular infant's food.

The tincture of avena sativa has sedative qualities, and has been used with asserted success in the treatment of the *opium habit.*]

BALSAMUM PERUVIANUM—BALSAM OF PERU.

[*An empyreumatic liquid balsam obtained from Myrospermum Peruiferum, U. S.*

Dose, fʒss (2. Gm.) in emulsion.]

LOCAL ACTION.

Peruvian balsam tends to check copious and unhealthy secretions. [It has decided antiseptic properties.] It may therefore be used, like myrrh, as an application to foul and unhealthy sores.

Constitutional Action.

Like the other gum balsams, it acts on the mucous membranes, and more especially on the bronchial tubes. It has therefore been prescribed to restrain excessive discharges in *bronchitis*, etc.

BALSAMUM TOLUTANUM—BALSAM OF TOLU.

[*A semi-liquid balsam obtained from Myrospermum Toluiferum, U. S.*

Officinal Preparations, U. S.

Syrupus Tolutanus. (Tinct. f℥ij to Oj.) Dose, f℥ss–j (16. to 32. Gm.).

Tinctura Tolutana. (℥jss in Oj.) Dose, fʒj (4. Gm.).

Tinctura Benzoini Composita. (Tolu ℥ss in Oj.)]

This agreeable preparation is almost exclusively used as a flavoring addition to cough mixtures, in the form of the syrup.

[BARII CARBONAS—CARBONATE OF BARIUM.

Only introduced into the Pharmacopœia in order to provide a source for the—

Officinal Preparations.

Barii Chloridum, and

Liquor Barii Chloridum. Dose, gtt. xxx–l. (2. to 2.5 Gm.).

The symptoms of poisoning by barium chloride or carbonate are those of an irritant, with vertigo, convulsions, and paralysis. Gastric inflammation is found post-mortem. The test for baryta is sulphuric acid. Antidotes: sulphate of magnesium or sodium, or dilute sulphuric acid, with demulcents, and stomach pump.

Internal Effects.

Barium is only used in medicine in the form of liquor barii chloridum, which is recommended by Prof. Gross as an alterative in *scrofula*, particularly in cases distinguished by a tumid upper lip.]

BELLADONNA—DEADLY NIGHTSHADE.

[**Belladonnæ Folia.** The leaves of Atropa Belladonna, U. S.

Belladonnæ Radix. The root of Atropa Belladonna, from plants more than two years old, U. S.

OFFICINAL PREPARATIONS, U. S.

Tinctura Belladonnæ. (From the leaves, ℥ij to Oj.) Dose, gtt. x–xx (.65 to 1.30 Gm.).

Extractum Belladonnæ. (Inspissated juice of the leaves.) Dose, gr. ss–ij (.03 to .13 Gm.).

Extractum Belladonnæ Alcoholicum. (Of the leaves.) Dose, gr. ss–ij (.03 to .13 Gm.).

Extractum Belladonnæ Radicis Fluidum. Dose, ♏ij (.13 Gm.).

Emplastrum Belladonnæ. (From the root.)

Unguentum Belladonnæ. (From ext. belladonnæ, ʒj in ℥j.)

Suppositoria Belladonnæ. (From ext. belladonnæ alc., gr. ss.)

Atropia. (From the root.)
Atropiæ Sulphas.
{ Dose, gr. $\frac{1}{60}$, or hypodermically gr. $\frac{1}{120}$ (.001 to .0005 Gm.).

ANTIDOTES.

Chemical. Fresh animal charcoal, tannin, vegetable astringents, and the fixed alkalies.

Physiological. Opium, Calabar bean, tartrate of antimony and potassium, and pilocarpin.

NOTE.—In the treatment of belladonna-poisoning, the irritating emetics, such as mustard, ipecacuanha, and sulphate of zinc, should be exhibited to remove from the stomach any excess of the poison remaining unabsorbed. Apomorphia might be useful hypodermically (gr. $\frac{1}{20}$, repeated). Purgatives containing the chemical antidotes should then be given to neutralize any of the drug in the intestines. Symptoms of narcotism should be treated as they arise, by artificial respiration, douches, counter-irritants, and diffusive stimulants. The physiological antidotes, being counter-poisons, should be used with the greatest care.]

LOCAL ACTION.

Belladonna is used externally, on account of its soothing properties, in various forms of *neuralgic* and *rheumatic pains*, in which cases the liniment, applied either alone, or in combination with chloroform liniment, often gives relief. It is also a good application in acute rheumatism, placed on cotton-wool and thus encasing the swollen and tender joints. Belladonna is also useful, as has been specially pointed out by Mr. Heath, in *boils and abscesses*, where the suppurative process may be prevented or even arrested by its use. It is also a good application to inflamed *piles* and *fissure of the rectum*. It is also applied to the skin to check localized sweating, to the breast to arrest the secretion of milk, and to the neighborhood of the eye to dilate the pupil; but its actions here are so intimately associated with the theory of its internal administration, that we will say no more on the subject at present.

Belladonna is very readily absorbed through the unbroken cuticle, and symptoms of poisoning have occasionally been caused by its local application.

INTERNAL ADMINISTRATION.

Physiological Action.	*Therapeutical Application.*
1. *On the Brain.*—After full doses of belladonna, a tendency to delirium sets in, usually of a joyful character, and attended by hallucinations and spectral illusions. Sleep generally follows.	1. Belladonna may be cautiously used as a hypnotic when other remedies fail. Ringer records an interesting case of acute mania in which the heroic dose of gr. j of atropia acted well by causing sleep.
2. *On the Spinal Cord.*—In frogs this action is very decided, for when atropia is injected below the skin the animal is at first paralyzed, lying quite motionless, with arrested breathing, which period of inaction is suddenly interrupted in about from one	2. It is used in some spinal affections in accordance with the principles of Dr. Brown-Séquard, explained under another section. It is also of value in checking the tendency which occasionally exists to nocturnal seminal emissions, when these

to eighteen hours by the occurrence of violent tetanic spasms.

3. Belladonna paralyzes the terminal filaments of the third nerve supplied to the circular or sphincter fibres of the iris, and thus allows the sympathetic, which rules over the radiating fibres, to come into unchecked play, and so dilate the pupil. At the same time we observe a diminution in ocular tension and imperfect vision, especially for near objects, due to paralysis of the power of accommodation.

Gubler says that it also causes a diminished sensibility of the cornea and retina, with prolonged retention of images by the retina. He is rather inclined to believe that it has some special action on the muscular tissue of the iris.

become of exhausting frequency.

3. Belladonna, used more conveniently in the cleaner form of atropia, is in very extensive use in eye diseases to facilitate ophthalmoscopic examinations, and to keep the pupil freely dilated in iritis, and so lessen the risk of adhesion of its free margin to the lens, with subsequent contraction, distortion, and impairment of vision.

It is also used to obviate protrusion of the iris through any hole in the cornea made by ulceration or accident, and it forms a soothing application in various painful affections.

To dilate the pupil the liq. atropiæ [Br., gr. iv ad f℥j] is now generally used, care being taken only to introduce a very small drop into the eye; for if a larger quantity is applied, the resulting effects and inconveniences, more especially the paralysis of accommodation spoiling the eye for near work, may last from a week to twelve days, much to the annoyance of the patient. [Although weaker solutions take a little longer time to dilate the pupil and paralyze the accommodation, yet these effects are more transient and therefore more satisfactory to the patient. A gr. $\frac{1}{4}$ solution is strong

4. The action of belladonna on the sympathetic nervous system is somewhat irregular, and to this is no doubt due some at least of that action on certain secretions which we shall shortly note more fully. But one symptom often observed, more especially in children, probably proceeds from vasomotor paralysis, and that is transient flushing and sweating of the face now and then following a dose.

5. The influence of belladonna on the circulation is due to another nervous influence. Under the use of this drug we observe increased rapidity and force of cardiac action, and this is explained by a paralyzing action which it exerts on the terminal inhibitory filaments of the pneumogastric nerve distributed to the intimate structure of the heart, as well as on the nerve itself, thus differing from curare, which only affects the trunk of the nerve. It is proved by experiment that the sympathetic

enough for ordinary use, and will dilate the pupil in about half an hour after instillation.]

Belladonna being so readily absorbed, however, dilatation of the pupil will ensue on application of the extract or liniment for any length of time to any part of the body.

5. Belladonna is an excellent cardiac tonic, increasing the regularity and strength of the contractions of the heart.

It is also a very soothing remedy in cases of irritable palpitation, and the old-fashioned belladonna plaster is certainly of use in these conditions.

nerve supply has the power of causing very rapid action of the heart; but a rein is kept on this, and the proper balance of motive force is sustained by the pneumogastric nerve, which inhibits or restrains the impetuous action of the sympathetic. By paralyzing these inhibitory filaments, then, belladonna hands the heart over to the sympathetic, which, without rein or drag, runs riot, and we accordingly find that excessive increase in the heart's rapidity follows the injection of a moderate quantity of atropia.

Coincident with this we get raised arterial tension.

6. Belladonna contracts the small vessels, probably not from nervous influence, but from a direct action upon the unstriped muscular fibres surrounding the arterioles.

6. Dr. Brown-Séquard recommends the use of belladonna in those cases of chronic inflammation of the spine leading to paralysis, where it acts well by contracting the vessels and diminishing the supply of blood to the affected part; and he gives it internally, and applies a plaster along the spine.

To this contracting influence on the small vessels is probably due the effect of belladonna in checking local inflammatory conditions; [and the power of atropia given in small doses frequently repeated, to relieve *menorrhagia* and *hæmoptysis*. (Dr. Yacke.)]

7. *On Respiration.*—Belladonna tends to increase the rapidity of the breathing by stimulation of the respiratory centre.	7. Atropia has been recommended as an efficient remedy in *asthma.*
8. It has the power of contracting unstriped muscular fibre in other situations than the arterial tubes. It probably does so both in the bladder and intestines.	8. Belladonna is an excellent remedy for the nocturnal *incontinence of urine* of children; but in order to do any good it must be boldly pushed, and I have been obliged to give as much as f℥jss or even f℥ij of the tincture [Ph. B.] before success was attained.[1] From its tonic influence on the muscular structures of the intestines, it is an excellent adjunct to purgative pill masses, from ¼ to ½ grain acting well in combination with colocynth; or, even given alone with ext. gentianæ, it will often secure a regular action of the bowels. It is also very useful by relieving spasm, as in colic, and intestinal obstruction has occasionally yielded to large doses.
Action on Secretion.—9. *Salivary.*—It checks the salivary secretion, causing a peculiar sensation of dryness in the mouth and throat; and this is believed to be due to a remarkable selective action on the secretory branches supplied from the chorda tympani nerve to the submaxillary ganglion.	9. Belladonna has been used to check excessive salivation.

[[1] The Tincture of Belladonna, U. S., is about 2½ times the strength of the English preparation.]

10. *Cutaneous.* — Belladonna most effectually arrests the action of the skin, and occasionally under its use a vivid red eruption, not unlike scarlet fever, breaks out.	10. It is an excellent remedy for undue *sweating*, whether general, as in phthisis (as originally recommended by Bartholow in 1869)[1] or rheumatism, or local, as about the head of rickety children or the feet of some individuals. It may be either given in the form of succus, extract, or tincture, or better by the subcutaneous injection of atropia.
11. It also checks the secretion of the milk, used either locally or internally.	11. It is a most valuable remedy in cases where inflammation threatens in a breast, when the child has died or cannot suck, and the gland becomes congested from retention of its secretion. Here the external application of belladonna speedily diminishes the red, tense, shining aspect, relieves the wearing pain, and arrests the milk.
12. On the solid urinary constituents no special action has been noted, but it increases the flow, by raising the tension in the glomeruli of the Malpighian bodies.	12. It may therefore be recommended as a good diuretic.

Belladonna is also used under one or two conditions which cannot accurately be grouped under any specific heading.

Thus it has been vaunted in *whooping-cough*, but after careful and repeated trials with large and small doses, I am compelled to agree with Dr. Kelly that its action in this disease is too uncertain to be of much use. But in certain forms of spasmadic cough, simulating pertussis, or when the cough

---

[[1] To Da Costa belongs the credit of having first demonstrated the value of atropia in checking excessive sweating in phthisis.]

is merely an occasional, loud, clanging bark, I have derived much benefit from belladonna. In *epilepsy* and *chorea* it has been tried, but without marked success. [As a prophylactic against scarlet fever, belladonna has attained considerable reputation, perhaps undeservedly. It is to be given in small doses, continued twice or thrice daily until danger is over.]

The subcutaneous injection of atropia is said by Dr. Anstie to be of great service in *lumbago*, *sciatica*, and *chronic rheumatism*, and to be the best of all remedies for pain in the pelvic viscera. It has also been recently observed that the addition of a little atropia to the ordinary morphia injection tends to obviate the distressing faintness, pallor, and nausea which occasionally mar the efficacy of the subcutaneous mode of administering this valuable drug. Ringer recommends its use in irritative *dyspepsia*, giving from $\frac{1}{6}$ to $\frac{1}{4}$ gr. of the extract night and morning, and gradually increasing the dose. [A one per cent. solution of atropia, if applied to an exposed nerve pulp, is said to relieve toothache immediately.]

DRAWBACKS TO THE USE OF BELLADONNA.

Poisonous Symptoms and Antidotes.—Occasionally the use of atropine drops to the eye causes an erysipelatous inflammation about the lids and face, and patients often complain of the disfigurement and inconvenience arising from a widely-dilated pupil. Liebreich (St. Thos. Hosp. Rep., vol. vii.) points out that the poisonous symptoms of atropia are occasionally developed by its introduction into the eye, and that they are due, not so much to absorption by the conjunctiva as to the fluid trickling through the lachrymal ducts into the nose, throat, and stomach. This may be avoided by telling the patient to rinse his throat occasionally. He also notes conjunctivitis, erythema, eczema, and peculiar pearly granulations on the conjunctivæ from the long-continued use of these drops. Minor degrees of belladonna poisoning, however, need give us no uneasiness. Idiosyncrasy may also here be the source of inconvenience, and we may find persons affected with dryness of the mouth and throat after very small doses. This is always the first indication of the physiological action of belladonna, and is followed by a peculiar sensation of thirst and feverishness, without heightened temperature, rapid pulse and breathing, red tongue; the face then flushes, delirium sets in, with great weakness, very hurried breathing, convulsions, and finally coma, which ends the scene. The antidotes are opium, which, within certain limits, is antagonistic to belladonna, animal charcoal, the fixed alkalies, which destroy its poisonous properties, and Calabar bean, which has recently been shown to be the physiological antidote. A direct physiological antagonism has also been shown to exist between atropia, muscarin, and jaborandi, or pilocarpine, which stimulate the intracardiac inhibitory apparatus, and slow the heart.

One curious point about belladonna is that, although so poisonous to man, its destructive influence is very various on other animals. The carnivora are much more readily affected by it than the herbivora, many of whom browse on it with impunity. Thus a horse has been known to eat eight pounds of the leaves without injury; blackbirds feed freely on the berries; and 15 grains of atropia are required to poison a rabbit.

DOSE AND MODE OF ADMINISTRATION.

Atropia may be given in phthisical sweating, in pill, in doses varying from $\frac{1}{400}$ grain (Bartholow) to gr. $\frac{1}{75}$ to $\frac{1}{25}$ [Da Costa]; but it is not very often used internally.

It is well to note that children take not only without injury, but with benefit, much larger doses than adults, and, whilst I have seen a woman display well-marked physiological symptoms after a few 10-minim doses, I have often prescribed 20 minims of the [English] tincture for a child of two years without anything of the kind.

[ASTHMA CIGARETTES.

R.	Belladonnæ fol.	gr. xcvj;	or (approximately)	6 50	Gm.
	Hyoscyami fol.,				
	Stramonii fol., āā	gr. xlviij;	or	3 25	"
	Ext. opii	gr. iv;	"	25	"
	Tabaci fol.	gr. lxxx;	"	5 30	"
	Aquæ bullientis	Oj;	"	500	"

Macera per horam in vase leviter clauso, cola, et adde—

	Potass. nitrat.	ʒij ℈ij;	or	10 60	Gm.
	Potass. arsenitis	ʒv ℈j;	"	21 30	"

M. S. Saturate sheets of bibulous paper in this solution, dry and roll them, and use for fumigation as directed.

Phila. Hosp.]

BENZOINUM—BENZOIN.

[*A solid balsam obtained from Styrax Benzoin, U. S.*

OFFICINAL PREPARATIONS, U. S.

Ammonii Benzoas. Dose, gr. x–xxx (.65 to 2. Gm.).

Tinctura Benzoini. Dose, fʒss–fʒj (2. to 4. Gm.).

Tinctura Benzoini Composita. Dose, fʒj–ij (4. to 8. Gm.).

Unguentum Benzoini. (Adeps Benzoatus, Br.)

Acidum Benzoicum. (Enters into Tinctura Opii Camphorata.) Dose, gr. x–xxx (.60 to 2 Gm.).]

LOCAL ACTION.

Physiological.	*Therapeutical.*
Tincture of benzoin is a stimulant to raw surfaces. [Benzoin has the property of preventing rancidity in ointments, etc., in hot weather.]	It is therefore occasionally used as an application to foul or indolent sores. [The compound tincture is a useful application to *cracked nipples.*]

INTERNAL ACTION.

Benzoin has the stimulating influence on mucous membranes possessed by most of the gum-balsams. During its passage through the blood it becomes converted into hippuric acid, and increases in some measure the acidity of the urine.	Benzoin may be prescribed with effect in advanced cases of *bronchitis,* and in some conditions of chronic irritation about the bladder. It may be conveniently given in the form of the benzoate of ammonia.

R.	Tincturæ benzoini compositæ	fʒvj;	or	24	Gm.	
	Mucilaginis acaciæ	f℥j;	"	32	"	
	Syrupi zingiberis	f℥ss;	"	16	"	
	Aquæ menthæ piperitæ	f℥vj;	"	192	"	M.

S apiat unciam unam quartâ quâque horâ.

For advanced *bronchitis.*

[Benzoic acid, in combination with lime, has been used successfully in the albuminuria of pregnancy and in Bright's disease, by Dr. A. H. Smith, in doses of sixty to eighty grains a day.][1]

[[1] Proceedings Phila. Co. Med. Soc., vol. iii. p. 106.]

[OLEUM BERGAMII—OIL OF BERGAMOT.

The volatile oil obtained from the fruit of Citrus Limetta (De Candolle), U. S.

Used almost exclusively as a perfume.]

BISMUTHUM—BISMUTH.

[*Commercial bismuth of good quality, U. S.*

OFFICINAL PREPARATIONS, U. S.

Bismuthi Subcarbonas. Dose, gr. xv–xlv (1. to 3. Gm.).

Bismuthi Subnitras. Dose, gr. v–xxx (.32 to 2. Gm.).]

LOCAL ACTION.

Physiological.	*Therapeutical.*
Bismuth has no action on the unbroken cuticle, but applied to a raw or mucous surface, it is sedative and astringent.	It is a good application to *intertrigo*, *ulceration about the mouth*, and as an injection in *gonorrhœa* and *leucorrhœa*. It has lately been recommended as a snuff to check *cold in the head*, and the liquor has been praised as an application to *prolapsus ani* (Cleland).

INTERNAL ACTIONS AND USES.

On Digestive Tract.—Bismuth is sedative to the stomach, and exerts an astringent influence over the intestines, probably in virtue of its local effects. [In large doses, the subnitrate of bismuth has caused fatal gastro-enteritis.]

Bismuth is one of our most valued remedies in many forms of *dyspepsia*, the main indications for its use being pain and vomiting. When a patient suffers acute pain after eating, with or without sickness, the tongue being clean and much flatulence present, we may give bismuth with much confidence; it is also of much service in the vomiting of drunkards, in *pyrosis*, and in many forms of *diarrhœa*, more especially that met with in children.

Mode of Elimination.

Very little bismuth is absorbed, and it is principally thrown out of the system by the intestines, to whose secretion it imparts a blackish hue, from the formation of a sulphide.

Mode of Administration, etc.

The subnitrate of bismuth, which is the most effective preparation, may be given simply in powder, either by itself or in combination with charcoal or soda; or it may be given in solution with hydrocyanic acid, or infusion of gentian; moderately large doses being preferable.

℞.	Bismuthi subnitratis	ʒij ;	or	8		Gm.	
	Mucilaginis acaciæ	f℥j ;	"	32		"	
	Acidi hydrocyanici diluti	♏x–xx ;	"		65	"	
	Infusi gentianæ	q. s. ad f℥vj ;	"	192		"	M.
S.	Sumat f℥ss ter die.						

℞.	Liquoris bismuthi et ammoniæ citras [Br.]	fʒiv;	or	16	Gm.
	Syrupi aurantii,				
	Infusi calumbæ, āā	f℥v ;	"	160	"
Misce.	Sumat unciam unam ter in die.				

The carbonate and oxide of bismuth are seldom used,. but an agreeable preparation, less effectual, however, than the subnitrate, is known as the liquor bismuthi et ammoniæ citratis (which contains gr. iij of the oxide to the drachm), and lozenges (containing each gr. ij of the subnitrate) are also included in the British Pharmacopœia.

BROMINIUM—BROMINE.

[*A liquid, non-metallic element, obtained from sea-water.*

Dose, gtt. ij–iij (.13 to .20 Gm.), largely diluted with water.

Officinal Preparations, U. S.

Ammonii Bromidum. Dose, gr. xx–xxx (1.30 to 2. Gm.).

Potassii Bromidum. Dose, gr. x–ʒj (.65 to 4. Gm.).

ANTIDOTE.

Ammonia, followed by the customary treatment for irritant poisons.]

Bromine has been used as a lotion by Dr. Routh and others [and in olive oil (♏x to ℥j) it is said to be a specific for the eruption of poison-ivy, *rhus toxicodendron*].

Bromine being never used to any extent in medicine, we shall consider its properties under Bromide of Potassium.

[Bromine is a valuable caustic, and is sometimes used in gynecology as an application to the uterus. It is said that its mixture with glycerine and alcohol is liable to explode. It is useful in hospital gangrene both as a caustic, and in dilute solution as an antiseptic wash. Used internally, it resembles iodine in its effects as an alterant.]

BUCHU—BUCHU.

[*The leaves of Barosma Crenata and other species of Barosma, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Buchu Fluidum. Dose, fʒss–j (2. to 4. Gm.).

Infusum Buchu (f℥j to Oj). Dose, f℥j–ij (32. to 54. Gm.).]

Physiological Action.

The physiological action of buchu is principally if not entirely expended on the mucous membrane of the genito-urinary organs. It is probable that the volatile oil which it contains, being rapidly taken into the blood and as rapidly excreted by the kidneys, acts locally through the urine on the lining membrane of the bladder and urethra. [It is also, to some extent, diaphoretic.]

The urine is impregnated

Therapeutical.

Buchu has long been valued by surgeons as a useful remedy in *chronic catarrh of the bladder* and the various mucous discharges from the genito-urinary organs depending on a relaxed condition of the affected parts. [It is largely employed in the treatment of subacute or chronic gonorrhœa, resembling turpentine in its effects, although far less stimulating. In incontinence or retention of urine, depend-with the peculiar odor of the drug, and is perhaps slightly increased in quantity.

ing upon want of tone in the bladder, it is a most useful agent.]

CADMIUM—CADMIUM.

Officinal Preparation.

Cadmii Sulphas. Used externally.

The sulphate of cadmium strongly resembles the corresponding zinc salt in its properties, and is occasionally employed as an astringent collyrium (gr. i–iv to rose-water f℥j). The iodide of cadmium is officinal in the British Pharmacopœia, but is only used in the form of unguentum cadmii iodidi [Br., gr. lxij to ℥j] in some cases of skin disease [making an admirable substitute for the iodide of lead].

CAFFEA—COFFEE.

[*The seed of Caffea Arabica, U. S*]

Tea, coffee, guarana, and coca, substances containing the same alkaloid, caffeine, have much the same effect.

CAFFEINE

is a very active substance, causing at first increase, but later diminution, of the reflex functions of the cord, with nervous convulsions and muscular rigidity, the motor nerves not being affected. The heart's action is at first accelerated, but afterwards retarded. The excretion of urea is lessened. The frequent and prolonged use of tea and coffee causes, in some persons, a variety of nervous sensations, sleeplessness, numbness and tingling of the extremities, with irritability of the heart; and there is no doubt that much loss of appetite and flatulent dyspepsia originate in the habit of drinking tea shortly before or after meals. The invigorating and restorative effects of tea and coffee are well known, and valued by persons undergoing much bodily fatigue. The therapeutic indications for tea and coffee are almost restricted to the administration of the latter substance in cases of *opium-poisoning*, but citrate of caffeine in 2-grain doses has been recently highly recommended in nervous and sick headache. It is also in doses of 3 grains and upwards an efficient diuretic, increasing the force and rapidity of the heart, and augmenting the blood pressure.

Guarana in gramme doses has been found a useful remedy for *migraine* or sick headache, and the chewed leaves of the coca plant have been highly recommended by Sir R. Christison and others as a nervine and muscular stimulant. Although the respected baronet found great benefit from this plant during severe exertion, Weston, the well-known pedestrian, gives his opinion as tending quite to the opposite conclusion.

[OLEUM CAJUPUTI—OIL OF CAJUPUT.

The volatile oil obtained from the leaves of Melaleuca Cajuputi (Roxburgh, Trans. Lond. Medico-Botan. Socy.), U. S.

Cajuput oil is highly prized in the East Indies as a stimulant carminative. The ordinary dose is gtt. ij–v (.12 to .32 Gm.), but it has been given with great success in the collapse of cholera, in doses of gtt. xv to f℥j (1. to 4. Gm.). It is also used as a rubefacient and counter-irritant, diluted with olive oil. Like other oils of this class, it relieves toothache when introduced into a carious tooth.]

CALCIUM—CALCIUM.

[**Calcii Chloridum**—Chloride of calcium prepared by fusion, U. S.

Calcii Hypophosphis—Hypophosphite of lime. Dose, gr. x–xxx (.65 to 2. Gm.).

Calx—Lime recently prepared by calcination, U. S.

Calx Chlorinata—A compound resulting from the action of chlorine on the hydrate of calcium and containing at least 25 per cent. of chlorine, U. S.

OFFICINAL PREPARATIONS, U. S.

Calcis Hydras. Used in pharmacy.

Calcii Carbonas Præcipitata. Dose, gr. xx–℥j (1.30 to 4. Gm.).

Calcii Phosphas Præcipitata. Dose, gr. x–xxx (.65 to 2. Gm.).

Creta Præparata. Dose, gr. x–xv (.65 to 1. Gm.).

Hydrargyrum cum Cretâ (mercury 3 pts., chalk 5 pts.). Dose, gr. v–xxx (.32 to 2. Gm.).

Trochisci Cretæ.

Mistura Cretæ. Dose, f℥ss (16. Gm.).

Testa Præparata. Dose, gr. x–xv (.65 to 1. Gm.).

Liquor Calcii Chloridi. Dose, ♏xxx (2. Gm.).

Liquor Calcis (lime-water). Dose, fʒj–iv (4. to 16. Gm.)

Linimentum Calcis (lime-water f℥viij, linseed oil f℥vij).

Potassa cum Calce (Vienna Paste). Used as a caustic.

Also used in the preparation of Æther Fortior, Ammonii Valerianas, Aqua Ammoniæ, Liquor Potassæ, Liquor Sodæ, Liquor Sodæ Chlorinatæ, Quiniæ Sulphas, Santoninum, Spiritus Ammoniæ, Strychnia, and Sulphur Præcipitatum.]

Local Action.

Physiological.	*Therapeutical.*
Some of the preparations of lime, used externally, are sedative or soothing; others are astringent.	Lime is used as a soothing application to burns, as in the linimentum calcis; and lime-water makes a good injection for *leucorrhœa*, or enema for the destruction of *thread-worms*. [In croup and diphtheria, great relief is afforded by breathing the vapor of slaking lime, or simply atomized lime-water.]

Internal Uses.

Lime, taken internally, neutralizes acid secretions, and has astringent properties.	It is therefore used with benefit in some forms of *dyspepsia* and in *diarrhœa*, liquor calcis being the most generally employed preparation. Lime-water is also of great service in preventing the curdling which often causes milk to disagree with patients of weak digestion.

Chalk is more astringent than lime, and is an excellent remedy, either alone or in combination with opium, for *diarrhœa.*

Chloride of calcium has been highly praised as a remedy for various forms of *scrofula.* [The dose of fused chloride of lime (not calx chlorinata) is gr. x–xx (.65 to 1.30 Gm.), but it is rarely prescribed.]

Phosphate of lime has been highly praised by Ringer in doses of gr. j to ij (.06 to .12 Gm.) in *rickets*, where it acts by improving the general nutrition of the system, and supplying structural elements in which the growing bones of badly nourished children are often deficient; the best time for administration being after the cessation of the acute period, when all tenderness has subsided. It is also of service in anæmia, general debility, tubercular diarrhœa, etc., and the dose must never exceed gr. j to ij, more than which will not be absorbed. [The hypophosphite of lime has been highly recommended in consumption.

The sulphide of lime is considered to be very useful in the furuncular diathesis, when boils appear in crops. Ringer gives gr. $\frac{1}{10}$ every hour, at first; subsequently a larger dose may be given less frequently. It is also used in scrofula and chronic ulcers.]

CALUMBA—COLUMBO.

[*The root of Jateorrhiza palmata (Miers), Cocculus palmatus (De Candolle); and Jateorrhiza Calumba (Miers), Cocculus palmatus (Wallich Catal. non D. C.), U. S.*

Officinal Preparations, U. S.

Extractum Calumbæ Fluidum. Dose, ♏xv–xxx (1. to 2. Gm.).

Infusum Calumbæ (root ℥ss to Oj). Dose, f℥j–ij (16. to 32. Gm.).

Tinctura Calumbæ (root ℥ij to Oj). Dose, fʒj–ij (4. to 8. Gm.).]

Local Action.

Calumba has no local action.

CONSTITUTIONAL ACTION.

Physiological.

On the Digestive Functions.—Like all bitter tonics, calumba stimulates the appetite, and increases slightly the secretion of saliva and the gastric juice. It is lighter and more agreeable than some others of the class, and has been believed to have sedative properties, in virtue of which it may be beneficially given in sickness and vomiting; but of this we have been unable to obtain reliable evidence.

Therapeutical.

Calumba is a good tonic in deficient appetite from indigestion or simple want of tone, in various dyspeptic conditions, and in most enfeebled states of the constitution, from whatever cause they may arise. [As it does not contain tannic acid, it may be given in combination with iron.]

MODE OF ADMINISTRATION.

Columbo is usually given in combination either with iron, with alkalies, or with other tonics. Thus:—

℞.	Ferri et potassii tartratis	ʒiss;	or	6 Gm.
	Potassii bicarbonatis	ʒij;	"	8 "
	Syrupi hemidesmi [Br.]	f℥j;	"	32 "
	Infusi calumbæ	f℥vij;	"	224 "

Misce, fiat mistura. Capiat unciam unam bis in die.

℞.	Pulveris calumbæ	gr. x;	or	65 Gm.
	Sodii bicarb.	gr. xx;	"	1 30 "
	Pulv. rhei	gr. v;	"	32 "
	Pulv. zingiberis	gr. x;	"	65 "

M. Fiat pulvis bis in die sumendus ante cibum.

A useful powder in some forms of dyspepsia.

CAMPHORA—CAMPHOR.

[*A peculiar, concrete substance, derived from Camphora officinarum, and purified by sublimation, U. S.*

Dose, in substance, gr. i–ij (.06 to .13 Gm.).

Oleum Camphoræ (Oil of Camphor). Dose, gtt. ij–iij (.13 to .20 Gm.).

Officinal Preparations, U. S.

Aqua Camphoræ (ʒj to Oj). Dose, fʒj–f℥ij (4. to 64. Gm.).

Linimentum Camphoræ (camphor 1 pt., olive oil 6 pts).

Linimentum Saponis.

Mistura Chloroformi (chloroform f℥ss, camphor ʒj in f℥vj).

Spiritus Camphoræ (℥ij to Oj). Dose, ♏xv to fʒj (1. to 4. Gm.).

Tinctura Opii Camphorata (Paregoric). Dose. f℥ss (16. Gm.).

Ceratum Plumbi Subacetatis (Goulard's Cerate).

Antidotes.

Opium and stimulants.]

Local Effects.

Physiological.	*Therapeutical.*
Camphor has some rubefacient properties, reddening and irritating the skin.	Camphor forms an ingredient of most of the liniments in common use.

Internal Action.

1. *Brain and Nervous System.*—Camphor in large doses causes a good deal of giddiness and confusion of ideas, even amounting in some cases to delirium. Muscular weakness is at first observed, but this rapidly gives way to violent epileptiform convulsions and almost maniacal excitement. In frogs, well-marked lowering of the reflex irritability of the spinal cord has been observed.	1. Camphor is not used in large doses on account of its action on the nervous system, and the results of the few experimenters who have been bold enough to try the effects of large doses on themselves have not been of a very encouraging nature. [It is moderately stimulating and diaphoretic, and possesses undoubted anodyne and narcotic influence. In the spasmodic and nervous complaints of women, camphor is extensively employed.]

2. *Circulation.*—In small doses camphor seems to stimulate the heart's action, but after the administration of larger quantities great cardiac prostration has been observed by Dr. Geo. Johnson and others.	2. Camphor has been found of service in the early stages of *coryza*, but must be here used with caution, as the homœopathic tincture, which is sometimes prescribed outside of the regular profession, is now known to be a very strong preparation, and Dr. Geo. Johnson and others have described cases in which excessive weakness and faintness, with great cardiac and muscular prostration, followed doses of from 15 to 20 minims [and several fatal cases of poisoning by it have been reported].
3. *Respiration and Temperature.*—No influence on the respiration is noted, but there is a marked lowering of temperature.	
4. *Digestive and Secreting Organs.*— In large doses, some irritation of the gastro-intestinal mucous membrane has been observed, with diaphoresis, and the sexual appetite seems to be diminished.	4. Camphor is said to be a good remedy in summer *diarrhœa*. It is a popular antidote in *chordee*.

ADMINISTRATION.

The bromide or monobromide of camphor has been highly recommended in nervous palpitation and irritation of the genito-urinary organs, and it also has the power of lowering the bodily temperature.

[The combination of camphor with opium and acid forms an exceedingly useful mixture for the treatment of *acute dysentery*, following a chilling of the general cutaneous surface, often noticed during summer. Opium, camphor, and aromatics form the basis of most of the cholera mixtures dispensed by druggists. Hope's Camphor Mixture is one of the best known of these nostrums, and is often of great service.

HOPE'S CAMPHOR MIXTURE.

℞.	Acid. nitrosi	ʒj;	or	4	Gm.	
	Tinct. opii deod.	♏xl;	"	2 60	"	
	Aquæ camphoræ q. s. ad	℥viij;	"	256	"	M.

Dose, $\frac{1}{4}$ part, after each evacuation.]

[CANELLA—CANELLA.

The bark of Canella alba, U. S.

OFFICINAL PREPARATIONS, U. S.

Pulvis Aloës et Canellæ (aloes 12, canella 3 parts). Dose, gr. x–xx (.60 to 1.30 Gm.).

Vinum Rhei (rhubarb ℥ij, canella ʒj, to Oj). Dose, fʒj–iv (4. to 16. Gm.).

USES.

Canella is an aromatic tonic, but is rarely prescribed alone. It contains no tannin, and may be given with a chalybeate. The powder of aloes and canella is a popular remedy for *amenorrhœa* under the title of Hiera Picra.]

[CANNA—CANNA.

The fecula from the rhizome of an undetermined species of Canna, U. S.

Canna-starch may be used like arrowroot as a bland form of nourishment for invalids.]

[CANNABIS AMERICANA—AMERICAN HEMP.

The flowering tops of Cannabis Sativa, cultivated in North America, U. S.

OFFICINAL PREPARATION, U. S.

Extractum Cannabis Americanæ. Dose, gr. $\frac{1}{4}$ to $\frac{1}{2}$ (.015 to .03 Gm.).]

CANNABIS INDICA—INDIAN HEMP.

[*The flowering tops of the female plant of Cannabis Sativa, variety Indica, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Cannabis Indicæ. Dose, gr. $\frac{1}{2}$ (.03 Gm.).

Tinctura Cannabis (gr. iij ad fʒj). Dose, gtt. x–xx (.65 to 1.30 Gm.).]

LOCAL ACTION.

Indian hemp is never used locally.

INTERNAL ACTIONS.

Physiological.

1. *On Brain and Nervous System.*—Indian hemp, like opium, possesses a double exciting and sedative action, the brain being stimulated into pleasant exhilaration before sleep sets in. This preliminary effect, however, is more powerful and lasting than in the case of opium, and the subsequent condition of slumber is usually disturbed by dreams and spectral illusions. Various authors have given graphic descriptions of the intellectual disturbance produced by this drug, dwelling more especially on a peculiar feeling of double consciousness, leading on, in some cases, to partial catalepsy.

We also find indications of some special affection of the sensory nerves, a marked degree of numbness and tingling, ushering in cutaneous anæsthesia and diminution of the muscular sense.

2. *Circulation.*—Some increased rapidity of pulse has been observed during the action of Indian hemp; but it is probable that this is only due to the condition of nerv-

Therapeutical.

1. Indian hemp may be used as a narcotic when other remedies fail; but its action is so uncertain and irregular, and the difficulty of procuring reliable preparations so great, that our present knowledge does not enable us to lay down any practical rules for its employment. Dr. Clouston, however, has obtained valuable assistance in *acute mania* by prescribing the tincture in combination with bromide of potassium. Although later experience has not confirmed the pretensions of those who formerly vaunted Indian hemp as a cure for *hydrophobia*, *chorea*, *tetanus*, and allied nervous ailments, we may sometimes produce good results in *neuralgia* and *migraine* by its cautious use.

ous excitement which we have just described.

3. *Digestive System.*—No special effect seems to be produced on the stomach or intestinal canal, and the absence of constipation following its use gives Indian hemp one advantage over opium.

DOSE AND MODE OF ADMINISTRATION.

℞.	Tincturæ cannabis Indicæ	fʒj;	or	4	Gm.
	Mucilaginis acaciæ	f℥j;	"	32	"
	Syrupi zingiberis	f℥ss;	"	16	"
	Aquæ menthæ piperitæ	f℥vj;	"	192	"

Misce, fiat mistura. Capiat unciam unam quartâ quâque horâ.

In *neuralgia*, etc.

CANTHARIS—SPANISH FLY.

[*Cantharis vesicatoria, Lytta vesicatoria* (*Fabricius*), *U. S.*

OFFICINAL PREPARATIONS, U. S.

Tinctura Cantharidis. Dose ♏iij–v (.20 to .32 Gm.).

Ceratum Cantharidis. (For spreading blisters.)

Ceratum Extracti Cantharidis.

Charta Cantharidis. (Blistering paper.)

Collodium cum Cantharide.

Linimentum Cantharidis.

Emplastrum Picis cum Cantharide.

Unguentum Cantharidis (ʒij in ℥j).

POISONING.

Cantharides is an acrid and corroding animal poison. Its prominent symptoms are a burning sensation in the throat; violent pain in the stomach and bowels; nausea, vomiting, and purging—the dejections being frequently bloody and purulent; great heat and irritation of the urinary organs, sometimes the most painful priapism; pulse quick and hard; and convulsions, tetanus, delirium and syncope.

The morbid appearances are principally inflammation and erosion of the stomach. If in substance, fragments of the flies, with their characteristic green, shining appearance, will be found adhering to the mucous coat, or mixed with the contents of the stomach ; there are also marks of inflammation in the intestines and urinary organs, but these are most evident when death does not soon follow the ingestion of the poison.

Treatment.—The promotion of vomiting by means of warm demulcents; copious dilution, bleeding, the warm bath, opiate frictions, enemata of mutton broth, laudanum, etc. Camphor, though not an antidote, alleviates some of the most distressing symptoms.

ANTIDOTE.

There is no antidote for cantharides.]

EXTERNAL ACTIONS.

Physiological.

The first effect of the application of cantharides to the skin is tingling and smarting, speedily followed by vivid redness and severe burning pain. To this succeeds the formation of large blebs containing a watery fluid rich in albumen and fibrine ; and if the blister be allowed to remain for any lengthened period in contact with the skin, ulceration and sloughing may supervene. It has been found that the moderate counter-irritant action of cantharides causes the copious exudation of white blood-corpuscles into the subcutaneous areolar tissue, with engorgement of the more superficial structures underlying the skin, whilst the deeper strata look pale, anæmic, and flabby ; the lungs even being affected in this way. It has also been shown

Therapeutical.

Blisters are used to fulfil the following indications :—

1. To relieve pain. There can be no doubt that blisters frequently check pain most effectually, as in *subacute pleurisy*, *pleurodynia*, *gastralgia*, *sciatica*, and *neuralgia*, it being important that in this last-named affection the counter-irritant should be placed as near as possible to the root of the affected nerve.

2. To check inflammatory conditions. There is no doubt that some local inflammations may be checked by blistering a neighboring vascular area. Thus, in *iritis* and some other inflammatory affections of the eye, benefit may be procured in this way ; and in acute *rheumatism* blisters applied immediately above the inflamed joints rapidly remove pain and swelling.

that the irritant action of cantharides may penetrate through the skin, and cause redness and inflammation of the pleura and peritoneum. The first constitutional effect of a blister is a slight elevation and subsequent depression of the temperature, with weakening of the action of the heart.

It not uncommonly happens that cantharides may be absorbed through the skin, and cause kidney irritation.

[Blisters are spread with the cerate and not with the ointment of cantharides; the prescription being in this form:—

℞. Cerati cantharidis q. s.
Ft. emplastrum 2 × 2 in.
S. Apply as directed.

A better method of making blisters however is mentioned at the foot of the next page.]

On this principle, also, Mr. F. Jordan recommends his iodine treatment of localized surgical affections already referred to.

In how far inflammations of internal organs may thus be treated with advantage is a somewhat open question; for although the withdrawal of blood from the deeper structures might theoretically be considered beneficial, it is practically found that the pain and annoyance of blisters add to the feverish discomfort of the victims of acute disorders.

3. To promote absorption. Blisters are supposed to aid the absorption of effused products, fluid or solid, and are therefore much used in *thoracic dropsy*, either pleural or pericardial, the latter stages of *pneumonia*, *chronic joint-disease*, etc.

4. To stimulate and alter vascular or nervous functions, etc. Blisters may be employed to rouse patients from the stupor of *typhus*, or *narcotic poisoning*, or various *brain affections*, to check obstinate vomiting, and under various other conditions laid down in works on practical medicine.

INTERNAL ACTION.

Physiological.

Cantharides is a gastro-intestinal irritant, and also a

Therapeutical.

Cantharides is not much used internally, on account of renal stimulant and diuretic, causing an increased flow of urine, but frequently giving rise to a good deal of strangury, with painful, frequent, and difficult micturition, and bloody urine. This irritation may spread by sympathy to other allied organs, and uterine excitement on the one side, or excess of venereal appetite with chordee and seminal emissions on the other, may follow the administration of large doses.[1] its irritating properties. It is, however, occasionally prescribed in *pyelitis* and some chronic affections of the kidney, and in chronic diseases of the spine.

Some authorities also have praised it highly in psoriasis. It has also been used for the purpose of procuring abortion, and it possesses emmenagogue properties.

CAUTIONS. MODE OF ADMINISTRATION.

We must use blisters with caution under the following circumstances:—

In the aged, infirm, or very young, where troublesome ulceration is apt to ensue.

In acute inflammatory conditions, and more especially those of the kidney.

To cicatricial tissue, or to parts deprived of some of their vitality by the withdrawal of nervous influence, as in paraplegia.

Blisters are usually kept on from ten to twenty hours, but we may well limit the period to six or eight hours, and develop the blebs by a subsequent poultice. When the desired effect has been produced, let out the watery fluid, and apply a thick layer of cotton-wool.

[A good method of making blisters without pain is to apply collodium cum cantharide, or blistering collodion, over the desired area. If well applied it is efficient, prompt, and painless, and does not cause strangury. No poulticing is needed, as a rule, the application of a piece of waxed paper or oiled silk to protect it from the air only being employed. The epidermis over the blister should not be removed.]

---

[1] [The tincture of cantharides, U. S. P., is more than twice the strength of the English preparation.]

CAPSICUM—CAPSICUM.

[*Syn. Cayenne and African Pepper.*

The fruit of Capsicum annuum Capsicum fastigiatum (Blum), and other species of Capsicum, U. S.

OFFICINAL PREPARATIONS, U. S.

Infusum Capsici. Dose, f℥ss (16. Gm.).
Oleo-Resina Capsici. Dose, gtt. j (.06 Gm.).
Tinctura Capsici. Dose, fʒj–ij (4. to 8. Gm.).]

This is a topical stimulant to the mucous membranes, exciting the appetite in small doses, but in larger quantities causing gastro-enteritis. In some forms of sore throat, as in the early stage of ***tonsillitis***, or in simple relaxation of the mucous membrane, it forms a useful addition to a gargle as infusum capsici.

Recently it has been highly praised by Dr. Lyons, of Dublin, in ten-minim doses of the tincture before meals, for the relief of the nausea, depression, and drink-craving of the confirmed dipsomaniac.

℞.	Tincturæ capsici		♏x;	or		60	Gm.	
	Tincturæ nucis vomicæ		♏x;	"		60	"	
	Acidi nitrici diluti		♏xx	"	1	30	"	
	Aquæ	q. s. ad	f℥j	"	32		"	M.

Fiat haustus ter in die sumendus.

Useful in drink-craving.

CARBO—CARBON.

[*Carbo Animalis—Charcoal prepared from bone, U. S.*

Used in preparing Cinchoniæ Sulphas, Morphia, Quiniæ Sulphas, and Santoninum.

Carbo Ligni—*Charcoal prepared from wood, U. S.*
Used in preparing Acidum Sulphurosum and Potassii Iodidum.

OFFICINAL PREPARATION.

Carbo Animalis Purificatus.
Used in making Acidum Gallicum, Digitalinum, Strychnia, and Veratria.]

Local Actions.

Physiological.

Charcoal has no purely local action on any tissue with which it is brought in contact, and as it is quite insoluble it can exert no general influence on the functions of the body. It is therefore simply a mechanical agent and acts in virtue of the following properties —

1. It not only freely absorbs gases within its pores, but oxidizes and destroys those of an offensive and injurious nature, as sulphuretted hydrogen; and further, it also deodorizes, by oxidation, and destroys organic impurities of all kinds, thus decolorizing solutions which contain them.

Therapeutical.

1. In virtue of its absorbing powers, charcoal is used in many of those cases of *dyspepsia* where large quantities of gas are formed by premature decomposition of the food, and where much pain, nausea, and want of appetite are experienced by the patient. In *consumption* and many chronic stomach disorders, charcoal acts well by relieving the *flatulence* which is often the chief discomfort of the sufferer. Charcoal is also an excellent deodorizer and antiseptic, and is used for these purposes in the construction of filters, contact for four months being sufficient to purify the foulest and most deeply stained waters; and if the organic matter present does not exceed from 1 to 2 grains per gallon the charcoal will permanently retain its cleansing properties. It may also be of great service in absorbing and destroying offensive effluvia in the neighborhood of sewers or drains, and it used to be a fashionable application to unhealthy *ulcers;* but cleaner and equally effectual antiseptics have now entirely displaced it from popular favor.

It is also occasionally employed in the formation of

	respirators and as an adjunct to tooth powders, and Dr. Thorowgood advises its prescription in teaspoonful doses in *bleeding piles.*
2. Animal charcoal possesses the power of rendering various vegetable poisons inert by placing them in a form of combination beyond the absorptive powers of the stomach.	2. If we are called very early to a case of *poisoning* by *opium*, *aconite*, *strychnia*, or other vegetable poison, we may hope to do some good by charcoal, provided that absorption of the poisonous agent has not yet taken place to any extent.

MODE OF ADMINISTRATION.

As a medicinal agent vegetable charcoal alone is used, and may be given in doses of from a tea- to a table-spoonful, great care being taken to insure perfect freshness, as its absorptive powers are seriously impaired by keeping. It may be combined effectively with bismuth, or given in sandwich form between bread and butter, or moistened with spirit in a wineglass before suspension by water; but in any case its unsightly appearance, gritty consistence, and insolubility interfere with its prescription in elegant form, and we may advise our patients with advantage to make use of the varieties of biscuits, lozenges, and capsules, which the ingenuity of chemists have devised.

As an antidote, animal charcoal must be given in considerable doses, as it is calculated that half an ounce is required to neutralize one grain of vegetable alkaloid. As an antiseptic it may be placed in shallow pans close to the outlet of drain or sewer ventilating shaft.

CARDAMOMUM—CARDAMOM.

[*The fruit of Elettaria Cardamomum, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Colocynthidis Compositum. Dose, gr. v–xxx (.30 to 2. Gm.).

Pulvis Aromaticus. Dose, gr. x–xxx (.65 to 2. Gm.).

Tinctura Cardamomi. Dose, fʒj–ij (4. to 8. Gm.).

Tinctura Cardamomi Composita. Dose, fʒj–iv (4. to 16. Gm.).

Tinctura Gentianæ Composita. Dose, fʒj–ij (4. to 8. Gm.).

Tinctura Rhei. Dose, fʒj–iv (4. to 16. Gm.).

Vinum Aloes. Dose, fʒj–f℥j (4. to 32. Gm.).]

This is an agreeable stimulant and flavoring adjunct.

[CARUM—CARAWAY.

The fruit of Carum Carui, U. S.

Officinal Preparations, U. S.

Oleum Cari. Dose, gtt. j–x (.06 to .65 Gm.).

Tinctura Cardamomi Composita. Dose, fʒj–f℥ss (4. to 16. Gm.).

Caraway is an agreeable aromatic, used as a stomachic, or to prevent the griping of other medicines. The oil is most frequently employed, but an infusion may be made containing ʒij to Oj.]

CARYOPHYLLUS—CLOVES.

[*The unexpanded flowers of Caryophyllus Aromaticus, U. S.*

Officinal Preparations, U. S.

Infusum Caryophylli (ʒij to Oj). Dose, f℥ij (64. Gm.).

Oleum Caryophilli. Dose, gtt. ij–vj (.12 to .40 Gm.). Cloves also enter into Spiritus Lavandulæ Compositus, Syrupus Rhei Aromaticus, and Vinum Opii.

Cloves are a stimulating stomachic, and may be given in substance in doses of gr. v–x.] Cloves, pimento, and oil of cajuput are carminative and perhaps antispasmodic, and may be useful in *flatulent colic*, *hysteria*, etc., more especially as adjuncts to other remedies.

[Clove-tea is a domestic remedy for *dysmenorrhœa* and *colic*. The oil is frequently used to relieve *tooth-ache*, a piece of cotton tinctured with it being placed in the cavity. Spice plasters are sometimes employed to relieve pain, a good formula being: ginger, cloves, cinnamon, and black pepper, in powder, each an ounce; tincture of ginger half an ounce; honey enough to make a stiff paste.]

CASCARILLA—CASCARILLA.

[*The bark of Croton Eluteria, U. S.*

[OFFICINAL PREPARATIONS, U. S.

Infusum Cascarillæ. Dose, a wineglassful.]

Cascarilla is a light and agreeable tonic.

[CASSIA FISTULA—PURGING CASSIA.

The fruit of Cassia Fistula, U. S.

Cassia pulp is laxative in doses of one or two drachms, but is rarely used except in the officinal combination, Confectio Sennæ, which is a favorite remedy against constipation in pregnancy. Dose, ʒj–ij (4. to 8. Gm.)]

[CASSIA MARILANDICA—AMERICAN SENNA.

The leaflets of Cassia Marilandica, U. S.

This is a competent substitute for the imported senna as a cathartic, but must be administered in rather larger doses. It is much used in the form of infusion, combined with fennel, or some other aromatic, to prevent griping.]

CASTOREUM—CASTOR.

[*A peculiar concrete substance obtained from Castor Fiber, U. S.*

OFFICINAL PREPARATION, U. S.

Tinctura Castorei. Dose, fʒss–ij (2. to 8. Gm.).]

Castoreum and musk possess much the same properties, the only difference being in the greater strength of the latter. They are stimulant and antispasmodic; but castoreum is rarely if ever used, and even musk, which was formerly much valued in France, and by Graves of Dublin, in typhus, pneumonia, and other diseases tending to assume an adynamic type, has now also fallen into comparative disuse.

[CATARIA—CATNEP.

The leaves and tops of Nepeta Cataria, U. S.

Infusion of catnep (catnep tea) is a favorite remedy for *flatulent colic* in infants, but is rarely used for any other purpose in regular practice, although a hot infusion is a domestic remedy for *amenorrhœa* and *hysteria.*]

CATECHU—CATECHU.

[*An extract prepared principally from the wood of Acacia Catechu, U. S.*

OFFICINAL PREPARATIONS, U. S.

Infusum Catechu Compositum. Dose, f℥j–iij (32. to 96. Gm.).

Tinctura Catechu. Dose, fʒj–iij (4. to 12. Gm.).]

INTERNAL EFFECTS.

Physiological.	*Therapeutical.*
Catechu has powerful astringent properties.	It is a much-used drug in the relaxed conditions of various mucous membranes, but more especially in *diarrhœa*, and it constitutes an essential ingredient in the mixtures generally prescribed for the relief of that condition.

℞. Tincturæ catechu	fʒvj;	or	24	Gm.
Pulveris cretæ aromatici [Br.]	ʒij;	"	8	"
Tincturæ opii	fʒij;	"	8	"
Mucilaginis acaciæ	f℥j;	"	32	"
Aquæ cinnamomi	q. s. ad f℥vj;	"	192	"

Misce, fiat mistura, cujus sumat semunciam post singulas dejectiones liquidas.

[Cerata.

List of Cerates officinal in the U. S. Pharmacopœia:—

Ceratum (formerly Ceratum adipis).
Ceratum Cantharidis.
" Cetacei.
" Extracti Cantharidis.
" Plumbi Subacetatis.
Ceratum Resinæ.
" Resinæ Compositum.
" Sabinæ.
" Saponis.
" Zinci Carbonatis.]

CERA—WAX.

[**Cera Alba.** Yellow wax bleached, U. S.

Cera Flava. A peculiar concrete substance prepared by Apis mellifica, U. S.

Wax is a good excipient, and is the basis of the cerates. It also enters into pills, ointments, plasters, and suppositories. It was an ancient remedy for *dysentery.*]

CERIUM—CERIUM.

[**Cerii Oxalas**—Oxalate of Cerium. Dose, gr. j–v (.06 to .30 Gm.).]

The oxalate of cerium, in doses of from gr. j to gr. ij, is a popular remedy in the *vomiting of pregnancy*, its mode of action being quite unexplained, and its success being, according to my own experience, greatly exaggerated.

It is generally prescribed in the form of pill.

℞. Cerii oxalatis	gr. xxiv;	or	1·50 Gm.
Extracti gentianæ	gr. xxxvj;	"	2·40 "

Misce, fiant pilulæ duodecim, quarum capiat unam bis in die.

[Disappointment from the use of this drug may be explained by the fact that the commercial oxalate of cerium often contains salts of lanthanum, didymium, and other impurities. The chemically pure oxalate of cerium is probably one of the most efficient remedies against the vomiting of pregnancy that we possess; given in powder, in pill, or suspended in mucilage.] Another reason for disappointment probably is that the usually prescribed dose is much too small. Some good authorities advise us to give ten grains every four hours, one dose being invariably taken before the patient rises from bed. It has also recently been recommended in doses of from 5 to 10 grains as a very efficient remedy for cough [and in smaller doses to children for whooping cough.]

CETACEUM—SPERMACETI.

[*A peculiar concrete substance obtained from Physeter macrocephalus, U. S.*

OFFICINAL PREPARATIONS, U. S.

Ceratum Cetacei, Charta Cantharidis, Unguentum Aquæ Rosæ.]

Requires no special notice. [Its internal use has been generally abandoned. The cerate, a perfectly bland preparation, may be used as a dressing to blistered surfaces. The unguentum aquæ rosæ, or cold cream as it is called, is much used for chapped hands and lips, and excoriated places.]

CETRARIA—ICELAND MOSS.

[*Cetraria Islandica* (Acharius, *Lichen Univ.*), *U. S.*

Officinal Preparations, U. S.

Decoctum Cetrariæ. Dose, f℥ss–ij (16. to 64. Gm.).]

This plant is supposed to have nutritious properties [and formerly enjoyed a great reputation as a demulcent and tonic in ***pulmonary affections***].

[Chartæ.

The officinal papers are Charta Cantharidis and Charta Sinapis.]

[CHENOPODIUM—WORMSEED.

The fruit of Chenopodium Anthelminticum, U. S.

Dose, in substance, gr. xx–xl (1.30 to 2.60 Gm.).

Officinal Preparation.

Oleum Chenopodii. Dose for a child, gtt. v–x (.30 to .60 Gm.).

Internal Effects.

A popular remedy against lumbricoid worms. It may be given night and morning for two or three days, then to be followed by a brisk cathartic.]

[CHIMAPHILA—PIPSISSEWA.

The leaves of Chimaphila umbellata (Pursh, Flor. Amer. Sept.), U. S.

Officinal Preparations, U. S.

Decoctum Chimaphilæ. Dose, *ad libitum.*

Extractum Chimaphilæ Fluidum. Dose, ♏xx–xl (1.30 to 2.60 Gm.).

Wintergreen is an Indian remedy for *scrofula*, *rheumatism*, and *nephritic affections*, and it enjoys some reputation as an alterative in regular practice, and has been recommended as a diuretic in *dropsy*. It is also tonic and astringent.]

[CHIRETTA—CHIRETTA.

The herb and root of Agathotes Chirayta, U. S.

Not much used in this country. See note under Gentian.]

CHLORAL—CHLORAL.

[*Syn. Hydrate of Chloral, U. S.*

TREATMENT OF POISONING.

Strychnia is the physiological antidote for chloral; and the treatment must be conducted on general principles for narcotic poisoning, by evacuants, counter-irritants, stimulants, and maintaining bodily heat.]

LOCAL ACTIONS.

Physiological.

When applied externally, chloral has been by some authorities supposed to have sedative properties, although the soothing action is preceded by some smarting and irritation; it is also an undoubted antiseptic.

Therapeutical.

It has been recommended as an external application in *neuralgia*, *rheumatism*, and other painful affections.

Used as a dressing to ulcerated surfaces, it seems to act well by removing the fetor of discharges and lessening pain; and it has been successfully employed, in solution, for the preservation of anatomical preparations, and for the injection of bodies, the only drawback to this being the disagreeable smell which results, and a certain amount of blackening of the tissues on exposure to the air. It is also used to check the irritation of eczema and prurigo.

CONSTITUTIONAL ACTIONS.

I. *Nervous System.*—1. *Brain.*—Chloral [acts as a sedative to the nervous centres and secondarily to the heart. In small doses it probably] produces an anæmic condition of the brain, and thus causes sleep by imitating the natural anatomical arrangement of that process. The resulting slumber begins very quickly after the dose is swallowed, it is usually sound and dreamless, and the patient wakes in seven or eight hours, well refreshed, and without any marked feelings of *malaise* or digestive disturbance. Exceptions to this, however, have been observed, and in these chloral has caused preliminary excitement; but it is more than probable that an explanation may be found in the use of the impure specimens of the drug too often retailed. Liebreich believes that chloral exerts its hypnotic influence by undergoing transformation in the blood into chloroformic and formic acid; but this is improbable for the following reasons:—

(1) The alkali of the blood is too feeble to liberate the chloroform, and the albumen is considered antagonistic to such a process.

(2) No smell of chloroform can be observed in the breath

1. Chloral is an excellent hypnotic, causing sound and refreshing sleep, without the digestive disturbance which usually follows the use of opium. It may be given in simple *insomnia* from mental worry, overwork, or other causes, and it is a remedy of great value in all diseases in which dangerous depression is apt to follow the continuous want of sleep. Thus, in *typhus*, in *delirium tremens*, where it must be pushed boldly in conjunction with an absolute suspension of all alcohol, in *phthisis*, *acute mania*, etc., we may prescribe it with much confidence of success. It has also been recommended in France as an anæsthetic by [intravenous] injection; from 2 to 4 grammes, thus made to enter the veins, being there supposed to yield chloroform, which then exerts its usual influence. There is no reason, however, to believe that anæsthesia thus produced would be in any degree safer than the old mode of inhalation; and as the patient is thus exposed to the additional risks of thrombosis, inflammation of the veins, and the entrance of air, one cannot wonder that this process has found no favor in this country. In addition to this, recent observation goes to

and no anæsthetic effect is produced on the sleeper by moderate doses.

2. *Spinal Cord.*—The reflex irritability of the spinal cord is very decidedly lessened, and the respiratory centre becomes weakened, and eventually paralyzed.

3. *Sympathetic and General Nervous System.*—The vasomotor system is enfeebled, but no special effect seems to be produced on other nervous structures, unless we believe a part of the loss of muscular power, sometimes observed in those who have taken chloral for some time, to be due to an action on the motor nerves.

II. *Circulatory System.*—Chloral has a powerful action on the heart, lowering and weakening its action by paralyzing its contained sympathetic ganglia. That this effect is not produced through the medium of the vagi is shown by the fact that it comes on even after these nerves are cut, and the terminal cardiac filaments para-

show that it is in no sense a true anæsthetic.

2. Chloral is of service in some spasmodic diseases, as *chorea*, *whooping-cough*, *asthma*, *incontinence of urine*, *labor*, *after-pains*, etc. It is also undoubtedly useful in [*trismus nascentium*, *puerperal convulsions*, and] cases of *tetanus*, many of which have recovered during its administration; Gubler recording 36, with the proportion of 21 recoveries, whilst Chopart has collected from all sources 80 successful cases. It may also be given as an antidote to strychnia.

3. Chloral, having no influence over sensory nerves, has no power, *per se*, of allaying pain, and is, therefore, useless in that class of cases where opium is of such signal service. It seems, however, to relieve the pain of labor, without causing inertia of uterus, or doing harm to mother or child.

II. Chloral, weakening cardiac action, must not be given where we have any reason to suspect an enfeebled state of the heart muscle. This shows how useless chloral is likely to be as a narcotic, when flaccid vessels allow free gravitation of blood to the brain during the recumbent posture, thus congesting its tissues, and effectually lyzed by atropine. Along with this slowing of the pulse we get lessened arterial tension from dilatation of the superficial vessels. [Professor Wood[1] considers it most probable that the chloral influences the heart through the centres at the base of the brain.]

III. *Respiration and Temperature.* — The breathing tends to become slower, and finally to cease, from paralysis of the respiratory centre; but urgent dyspnœa has occasionally been observed, and this has been ascribed to dilatation of the pulmonary vessels, causing an increased afflux of blood to be directed suddenly to the lungs.

The temperature falls, and this is no doubt due to surface evaporation produced by the dilated cutaneous vessels.

IV. *Secreting and Digestive Systems.*—No special influence is produced on any of these, but occasionally vomiting and purging have followed the use of chloral.

preventing sleep. Its action is most manifest when the circulation is strong and the arteries tight.

III. This effect on the respiratory centre naturally suggests caution in prescribing chloral in cases of advanced *bronchitis* with rapidly accumulating mucus secretion and deficient oxygenation of the blood. It has been much used in whooping-cough, but I have been unable to trace any special therapeutic effect beyond the soothing of the cough at night by producing sleep.

Chloral has been recommended as a good remedy in sea-sickness.

ABSORPTION AND MODE OF ELIMINATION.

Chloral is rapidly absorbed by the blood, and given out probably by the urine, the breath, and perhaps the skin.

Poisonous Effects.

Chloral may kill by cardiac syncope, and, as this ef-

Antidotes.

Here our efforts must first be directed to obviating the fect has been known to follow a single dose of 30 grains, considerable caution must be exercised in its use; or again, death may ensue from paralysis of the respiratory centre, with coma and gradual suffocation; and, finally, a series of cases has been recorded in which symptoms arose akin to blood poisoning, with purpuric and scorbutic eruptions, ulceration of gums, and great prostration, ending in death.

---

[1] [Therapeutics and Materia Medica, 2d ed., Philada. 1877, p. 321.]

tendency to death. We must endeavor to restore the heart's action by warmth, stimulants, strong coffee, and promote breathing by irritation of the surface, galvanism, and artificial respiration; counteract the rapidly-lowering temperature, on which so much danger depends, by warmth; and finally employ physiological antidotes, such as atropia and strychnia. One case is recorded in which alarming symptoms, caused by taking 370 grains, were removed by two subcutaneous injections of strychnia.

CAUTIONS, MODE OF ADMINISTRATION, DOSE, ETC.

[It is recommended that re-crystallized chloral only should be prescribed, as the commercial article is liable to be contaminated with impurities, and the results of decomposition.] Liebreich holds that many of the commonly described bad effects of chloral are due to impure preparations, which are unfortunately only too effectually masked by the syrups now in such general use. It is easy to detect impurity of the crystals, which should not be acicular in form, and cake chloral should always be distrusted.

The use of chloral requires caution, as many instances of death from its employment are on record, and other cases have been noted in which very serious symptoms followed doses varying from 10 to 50 grains. We must also be mindful of other physiological peculiarities. Thus great muscular prostration, more especially affecting the legs, and causing staggering, not very unfrequently follows its continued use.

Persons vary, however, in a very remarkable manner with regard to their susceptibility to the action of chloral, alcoholism lessening this in marked degree. Mr. Hulke (*Clin. Soc. Trans.* 1875) records a case in which a young lady, æt. 23, took in one dose 320 grains, causing lividity, failure of respiration, weakened action of the heart, and contraction of the pupils, from which she was recovered with difficulty by the stomach-pump, artificial respiration, and strong coffee. Mr. Bishop, of Boston, had a case in which a patient, suffering from delirium tremens, took 165 grains, followed by thirty-six hours' profound sleep, and a perfect cure on waking.

Prof. Gairdner met with a case of chorea in a little girl of eight, where 45 grains were taken by mistake with perilous immediate consequences, but entire removal of the disease. It is believed on somewhat vague evidence, that chloral-eating is practised on a large scale with resulting cerebral anæmia, and moral and muscular weakness; and the best-marked case I have met with is published by Mr. Tuflis, of the Edinburgh Asylum (*Edin. Med. Journ.* 1877), where 180 grains were regularly taken every day in frequent doses, causing dyspepsia, moral perversion, muscular weakness, a feeble heart, loss of memory, and epileptiform fits, speedily removed by withdrawal of the drug.

Various skin eruptions, usually confined to the face, beginning as spots of roseola, coalescing to form patches of erythema, occasionally generally diffused purpuric patches, and the very peculiar deep flushing of the face following the use of stimulants, and due no doubt to vaso-motor paralysis, have been carefully described by Dr. Crichton Browne and other observers.

There seems no doubt that chloral acts more powerfully in persons whose blood is strongly alkaline, and Prof. König found that the previous administration of sodium bicarbonate heightens the narcotic effect. In this way is explained the great susceptibility to the action of chloral noted by Dr. Russell, of Glasgow, in typhus fever. Liebreich believes it to act unfavorably in acute rheumatism, on account of the acid state of the blood. He recommends us never to give it on an empty stomach, nor to combine it with milk.

Considering the undoubted fact that not only dangerous symptoms, but even death, have followed a dose of 30 grains [and even of 10 grains], we must begin, as a rule, with 20 grains [or a smaller quantity], to be repeated as occasion requires. We must remember, however, that the narcotic action of chloral is not invariably exhausted in the single sleep to which it originally gives rise, but it may be held over until next night, so that our best practice will be to give a full dose only once in the forty-eight hours. The taste and smell of chloral being pungent and disagreeable, we must endeavor to render our prescription as palatable as we can. The syrup contains 10 grains to the drachm. Or we may use the following formula:—

℞.	Chloral. hydratis	gr. xx;	or	1 30	Gm.	
	Syrupi aurantii	fʒj;	"	4	"	
	Aq. menth. pip. q. s. ad	f℥ij;	"	64	"	M.

Fiat haustus horâ somni sumendus.

[The addition of gr. v of chloral to a small dose of morphia greatly adds to its hypnotic effect, and prevents unpleasant results that sometimes are produced by morphia alone.] As a preservative fluid for anatomical purposes we may use gr. v ad ℥j; as a dressing for wounds, ulcers, and sore nipples, etc., gr. xv ad ℥j; in eczema, gr. xxx to lx to an ounce of lard.

[Note.—**Chloral-Camphor.** By rubbing together gum camphor and chloral, a fluid is produced resembling simple syrup. This has been recommended as a local anæsthetic in *neuralgia*, applied with a brush to the external skin. It is rubefacient, but not vesicating.] By the addition of this to unguentum an application may be conveniently and very efficiently made to *prurigo* (Bulkeley).

Croton-Chloral—Butyl Chloral Hydrate.

(Not Officinal.)

[*A hydrate of trichlorbutylaldehyd made by the action of chlorine upon acetic aldehyde and distillation.*]

The name of Butyl Chloral, advised by Liebreich, would be an improvement, as preventing the idea of any relationship to croton oil. Dose, gr. iij to x (.20 to .60 Gm.).

Local Action.

None has been described.

Constitutional Action.

Physiological.	*Therapeutical.*
I. *Nervous System.*—1. *Brain.*—Croton-chloral causes sleep in from fifteen to twenty minutes.	1. Croton-chloral has been highly praised by its discoverer, Liebreich, as a narcotic, being given by him in doses of from 15 to 30 grains (1. to 2. Gm.). There is little English experience to

2. *Spinal Cord.*—No action is produced on the spinal cord, nor consequent muscular relaxation. Some paralyzing influence is eventually excited on the medulla.

3. *Sympathetic and other Nervous Systems.*—No influence seems to be exerted on the vaso-motor nerves, but on the fifth a well-marked sedative effect is noted, indicated by anæsthesia of the head and face, loss of irritability of the eyeball, and failure of the nerve-trunk itself to respond to galvanic stimulation.

II. *Circulation.*—Croton-chloral has no tendency to

quote on this heading, as the doses used here are far too small to produce sleep; but as the drug has no depressing action on the heart like chloral, there is no doubt that we may prescribe it with comparative freedom. [Subsequent experience has shown that in some patients dangerous and even fatal symptoms have been produced by ordinary doses in cases of organic heart disease. It appears to resemble chloroform in its uncertainty and danger.]

3. The anæsthetic influence of croton-chloral would naturally suggest its use in *facial neuralgia*, and a good deal of success has been thus obtained in dealing with this troublesome affection, doses of from 2 to 6 grains having generally been prescribed. Liebreich has so much faith in this sedative action, as to advise its use as an anæsthetic in operations about the face. [Before administering this remedy the heart should always be examined, as croton-chloral is contra-indicated by cardiac disorder.]

weaken or lower the action of the heart in health.	
III. *Respiration and Temperature.* — Croton-chloral tends to lower the rate of breathing, and eventually kills by paralyzing the respiratory centre. (It is better to dissolve croton-chloral in glycerine and water, than in alcohol.)	[III. Croton-chloral closely resembles chloral hydrate in its action upon the system, except in possessing greater danger. For this cause its use has been almost entirely discontinued in this country.]

CHLORINUM—CHLORINE.

[**Aqua Chlorini,** U. S. Chlorine-water. Dose, largely diluted, f℥j–iv (4. to 16. Gm.).]

The use of chlorine is almost entirely confined to its external application.

Physiological Action.	*Therapeutical Action.*
1. Concentrated chlorine gas directed upon the skin causes redness and smarting, followed by a pustular eruption and even erysipelatous inflammation.	1. It is never, however, used as a counter-irritant.
2. It is an excellent disinfectant, decomposing sulphuretted hydrogen and ammonium sulphide at once and more effectually than any other gas, and also destroys organic matter in the air, as it bleaches organic pigments and destroys odors, either by abstracting hydrogen or by oxidizing (Parkes).	2. It is therefore extensively used as given off by chloride of lime to purify the air from offensive effluvia, and to destroy infectious germs. In the form of lotion it is also used to cleanse foul or sloughing sores.
3. The inhalation of chlorine gas is stimulating or irritating to the lungs.	3. It has therefore been used in some forms of chronic bronchitis and phthisis, but is not now much employed. [It may be used in ***strychnia-poisoning.***]

INTERNAL USE.

Chlorine used to be given internally in medicine in various infectious fevers with a view to disinfection, but this has now become quite obsolete. [As extemporaneously made by the action of muriatic acid ʒj, upon chlorate of potassium gr. x, to which a pint of water is added in successive portions, it is recommended by Watson for diphtheria and other zymotic diseases.]

DOSE AND MODE OF ADMINISTRATION.

As a disinfectant it may be obtained by acting on chloride of lime with water or dilute sulphuric acid, or by pouring four parts by weight of strong hydrochloric acid on one part of powdered binoxide of manganese, or mixing four parts of common salt and one of binoxide of manganese with two parts by weight of sulphuric acid and two of water, varying the quantities according to the size of the room.

Vapor chlori [Br.] is used for inhalation, and liquor chlori [Br.] may be employed diluted as a lotion, or given internally.

DISADVANTAGE.

The great drawback of chlorine is the very irritating nature of its vapor, rendering it unsuitable for general use in rooms actually inhabited by the sick.

CHLOROFORMUM—CHLOROFORM.

[**Chloroformum Venale, U. S.** Commercial Chloroform.

Chloroformum Purificatum, U. S. Purified Chloroform. Dose, ♏x–xxx (.65 to 1.30 Gm.) largely diluted.

OFFICINAL PREPARATIONS, U. S.

Mistura Chloroformi (chloroform ℥ss troy, camphor gr. lx, yelk of one egg, and water f℥vj). Dose, f℥ss (16. Gm.).

Spiritus Chloroformi (a troy ounce to alcohol f℥xij, U. S.).[1] Dose, fʒss–j (2. to 4. Gm.).

Linimentum Chloroformi ($\frac{3}{7}$ chloroform, $\frac{4}{7}$ olive oil).

---

[1] [Spiritus Chloroformi, Br., contains one part in twenty.]

It is used in the manufacture of Liquor Gutta-Perchæ, and in preparing Atropia.

POISONING.

In the treatment of chloroform-narcosis, when there is failure of the circulation, vigorous and prompt measures are called for. The surface of the chest should be smartly slapped with the fringe of a towel dipped in ice-water, a piece of ice may be introduced into the rectum, the head must be lowered and the legs elevated, and ammonia held to the nose; an assistant meanwhile practising artificial respiration. This treatment Prof. Gross has found to be invariably effective, and he has not lost a patient out of more than 5000 cases of chloroform-anæsthesia.]

LOCAL ACTION.

Physiological.

Chloroform when allowed to remain for some time in contact with the skin, acts as an irritant, causing redness and smarting, followed by vesication.

It has also, however, some sedative properties.

Choloroform is an excellent solvent of caoutchouc, gutta-percha, and many fats and resins, and it also greatly assists the cutaneous absorption of most of the alkaloids.

Therapeutical.

The locally sedative action of chloroform has led to its extensive use as an application for the relief of *rheumatic* or *neuralgic* pains, the liniment being a convenient form.

It is also a useful remedy for allaying the itching of some chronic forms of *skin disease.*

CONSTITUTIONAL ACTION.

Chloroform, when taken internally, may act as a stimulant, sedative, and antispasmodic. There seems, occasionally, little doubt that [when administered for its anæsthetic effects, under certain circumstances,] it excites erotic sensations in women,

It is a useful remedy in *hysteria*, *asthma*, and *nervous palpitation*, for the arrest of *sea-sickness* and other forms of vomiting, and for the soothing and quieting of some forms of *irritable cough.*

and leads them to bring unfounded accusations against medical men.

COMBINED LOCAL AND CONSTITUTIONAL EFFECT.

Under this heading it may be convenient to discuss the anæsthetic properties of chloroform, and this we will now proceed to do on the plan adopted generally throughout these pages.

Physiological.

1. *On Brain and Nervous System.* — Chloroform has first a stimulating, and secondly a sedative, action on the brain, a good deal of excitement and struggling taking place during the early stages of inhalation, whilst, during the later, narcosis is complete, and the patient lies quiet and motionless. This condition resembles natural sleep in being associated with anæmia of the brain, but differs by its rendering the patient quite insensible to external impressions, including the most severe cutting operations, this effect being due to a paralyzing influence of the drug on the ganglionic centres of the sensory nerves.

The reflex functions of the cord are also lulled to slumber, and, if the inhalation is pushed too far, paralysis of the respiratory centre may ensue.

2. *Heart and Circulation.* —On the heart the influence

Therapeutical.

1. In the early stage of inhalation the patient usually feels confused and giddy, his eyes are suffused, his face congested, and the heart beats rapidly. This is often followed by apparent insensibility, from which, however, he can readily be roused, and very frequently a stage of violent excitement ensues, during which he struggles violently and with remarkable muscular force, talking and singing incoherently meanwhile. This stage has been compared with that of alcoholic intoxication. Succeeding to this we have that of "anæsthesia," in which he is profoundly insensible, with contracted pupils; and finally we reach that of "narcosis," in which the face becomes congested, the pupils dilate, and stertorous breathing sets in. Chloroform inhalation is only used during its first stage to alleviate the pain of childbirth, it being found that

of chloroform is at first slightly stimulating, the pulse becoming quickened; but secondary depression follows from a paralyzing influence on the sympathetic ganglia, the pulse now growing slower, and the arterial tension becoming lowered.

3. *Respiration and Temperature.* — The respiration tends at first towards increased rapidity, but if the inhalation is pushed so far as to affect the respiratory centre, the breathing grows slower and finally ceases. [It may cease suddenly without warning; and there is no means of determining previously, at least with our present knowledge, when this accident will occur, or what patients are particularly liable to it. This is the great objection to chloroform.] We usually observe some tendency to perspiration attending chloroform inhalation, and a consequent slight reduction of temperature.

4. On the *digestive and secreting organs* chloroform seems to exert no marked influence, the sickness so frequently observed during recovery being purely reflex in character.

full anæsthesia under these circumstances is apt to relax the uterine muscular tissues, and not only to check their contraction, but to predispose to future hemorrhage.

During the second stage chloroform is used for the purpose of obtaining full and complete insensibility to pain during the performance of operations; and this invaluable property has deprived the practice of surgery of much of its former horrors.

We also employ it freely to relax muscular tension and spasm, and so facilitate the reduction of *hernia* and *dislocation;* for diagnostic purposes, in order to dispel phantom uterine tumors, as well as to enable us to make a careful examination of extremely painful parts.

It is also of service for the relief of various forms of spasmodic affections, as *whooping-cough*, *infantile* and *puerperal convulsions*, *chorea*, and to alleviate pain, in *cancer*, during the passage of *renal* or *biliary calculi*, and under many other conditions.

POISONOUS PROPERTIES.

Chloroform may kill in two ways. (1) By primarily paralyzing the heart, and this

During chloroform-inhalation we must watch the pulse, and specially note enfeeblehas generally been considered to be due to the inhalation of air too highly charged with chloroform vapor, Mr. Clover holding that over 5 per cent. must be considered dangerous. Dr. Brunton, however, explains very ingeniously how it is that small doses are more apt to produce this effect than large, exciting as they do that irritative action of the terminal filaments of the 5th nerve, which are well known to cause stoppage of heart; and thus shows us, what could hardly be understood before, why so considerable a proportion of chloroform deaths have occurred during the performance of very trivial operations, or where the vapor has been timidly given.[1]

It seems highly probable, however, that, in accordance with the views of Syme, Lister, Chiene, etc., fatal accidents from chloroform are not so liable to proceed from the heart as (2) from the respiratory function; and this mode of fatal accident has been again subdivided into two headings: 1st. Death by apnœa, or stoppage of the breathing from nervous influence or mechanical causes; and this may arise, either from the tongue falling back,

ment, irregularity, or cessation of its beats. Sudden pallor of the face, lividity and gasping for breath are signs of ill omen. If the action of the heart seems to fail, we must administer stimulants by the mouth or rectum, and excite the cutaneous surface. Galvanism seems more likely to exhaust than excite the contractility of the heart muscle; and galvano-puncture, so much vaunted by foreign observers, has not been tried in this country.

Chloroform accidents depending, in a great majority of cases, on failure of respiration, we must endeavor to re-excite this function by cold sprinkling, or ammonia vapor, but, most hopefully, by the steady and persevering use of artificial respiration. Always, however, see that no mechanical hindrance to breathing exists, and more especially take care to draw the tongue well forward; this little operation acting not only by removing its own or, 2dly, from closure of the glottis by paralysis of the intrinsic muscles of the larynx. Of these, the first is by far the more common, and death is often caused by falling back of the tongue, closing the glottis. It therefore follows that, whilst engaged in the administration of chloroform, the breathing must be very carefully watched. 3. Death may also be produced by asphyxia, or suffocation from excessive formation of carbonic acid in the blood. [The density of chloroform vapor being much greater than atmospheric air, if given freely and without proper dilution, it may cause suffocation directly, by filling the air-cells and excluding oxygen, owing to the difficulty of diffusion of such a heavy vapor. This may explain the utility of Nélaton's method, which has been followed by such successful results in threatened death from chloroform. (See paper on the Physics of Anæsthetics, by Dr. Wm. H. Greene, in the *Am. Journ. of Med. Sci.* for April, 1882.)] mechanical impediment to breathing, but by drawing forward the epiglottis, pulls on the aryteno-epiglottidean muscles and opens the glottis. Mr. House, of Guy's Hospital, has saved two cases of impending suffocation by tracheotomy.

---

[1] [If this were true, there should be more deaths from heart-failure under ether than chloroform, because ether is more irritating to the upper air passages than chloroform.]

[It often answers the same purpose to raise the chin as far as possible from the sternum.

Dr. Howard has recently, with good reason, advocated throwing the head backwards and downwards over the edge of a bed or couch, so that any fluid that might have entered the trachea would flow outwards. C.]

Galvanic stimulation of the phrenic nerve has been recommended, and several apparently hopeless cases have been saved by the process of inversion as originally proposed by Nélaton. Nitrite of amyl has also been successfully used by inhalation.

Absorption and Elimination.

Chloroform is rapidly absorbed and rapidly given off by the breath and urine, in which secretion it can be readily detected.

Mode of Administration.

Fatal accidents from chloroform have become so alarmingly frequent of late—the total number, according to Bartholow, amounting to 500—that some surgeons even consider its use unjustifiable; but it is on the whole by far the best anæsthetic, and, by adopting the following precautions, we may hope to imitate the success of the Edinburgh School, where danger or inconvenience rarely occurs, Mr. Syme having met with no death during 8000 administrations. Prof. Fraser, of Edinburgh, advises the subcutaneous injection, fifteen or twenty minutes before chloroform is begun, of $\frac{1}{120}$ to $\frac{1}{60}$ gr. of atropia combined with gr. $\frac{1}{12}$ to gr. $\frac{1}{8}$ of hydrochlorate of morphia, with the object of stimulating the heart, obviating nervousness, and lessening or altogether preventing subsequent sickness.

1. Never permit inhalation to take place in a sitting posture, and see that the patient's neck is free from all constriction.

2. Give strict orders that no solid meal be taken for at least two or three hours previously [solid food should not be eaten for at least twelve hours, as a safe precaution], but a little beef-tea may be allowed, and a small sip of brandy is useful just before the operation. The sickness which so frequently attends a loaded stomach is not only inconvenient, but has proved fatal by suffocation from the drawing of vomited matters into the air-passages. And, in addition to this danger, vomiting is attended with special risks after such operations as ovariotomy and cataract extraction, and after the first of these it occasionally continues with exhausting pertinacity.

3. Use no special form of inhaler, but pour the chloroform upon a towel or other porous material, and give it with care, allowing free admixture of the vapor with sufficient atmospheric air. Tell the patient to close his eyes and to inspire deeply, and when the period of excitement comes on do not suspend the inhalation, but keep the towel firmly applied to the face until calm sleep is produced, or the slightest indication of stertor is heard. Complete anæsthesia is proved by the abolition of reflex action, as shown by insensibility of the eye when the cornea is lightly touched with the finger, by muscular relaxation, and by insensibility to pain.

[4. If the action of the heart seems to fail, remove the chloroform and administer ether vapor for a few respirations. Do not give anything by the mouth. If the respiration be languid and intermit, assist the movements by gentle pressure on the chest and abdomen. If the natural respiration has ceased and the pulse is not distinctly felt, at once resort to the more effective artificial respiration of Marshall Hall or Howard. Warmth should also be applied by the readiest means; galvanism, etc. C.]

When the operation is over, let the patient recover naturally, and do not disturb his sleep by the purposeless towel flickings so frequently to be seen in operating theatres. But the patient should be carefully watched for at least an hour after administration.

As regards the quantity of chloroform to be used for each inhalation, it is impossible to lay down any rule, for the inconveniences occasionally met with seem to bear no sort of proportion to the dose of the anæsthetic. [A couple of drachms may be poured from a dropping bottle upon the towel, and a few drops added from time to time to replace loss by evaporation. The chloroform should never be trusted to any but a skilled assistant.] If the chloroform be of good quality, it is safer, as shown by Brunton, to give it freely,[1] and it is better to trust to our own care and skill than to the fancied safety of inhalers. It can never be possible to deprive an unnatural condition like profound anæsthesia of all dangers, and even the theoretically safe instrument of Clover, with its guaranteed 3 per cent. of chloroform vapor, has been shown to be not absolutely free from risks.[2]

It would be very satisfactory could we lay down any laws for our guidance in anticipating danger from chloroform inhalation in any special class of cases, but this unfortunately we cannot do. It is now well known that neither organic disease of the heart nor conditions of extreme debility are contra-indications; and although fatty heart is frequently discovered *post-mortem*, we cannot absolutely state that this is not a mere coincidence, nor can we pretend to diagnose such degeneration with any certainty during life. Some authorities believe that chloroform is more dangerous to the old than the middle-aged or young, and there seems no doubt that habitual topers are brought under its influence with considerable difficulty.

---

[1] [Surely Brunton's views hardly warrant so much indifference to the dose of chloroform. The tendency to syncope is found to be in proportion to the strength of the vapor, whenever, by opening the windpipe, we make sure of its entrance into the lungs. Ten per cent. of chloroform vapor, given in this way, is rapidly fatal by arresting the heart's movement. The reason why chloroform has often been fatal in minor operations is, that it so often happens an extra dose is given that it may last long enough without further attention from the surgeon. C.]

[2] [I am not acquainted with any case in which so little as 3 per cent. has been fatal to the human subject. C.]

Chloroform is most generally given internally under the form of the spiritus chloroformi, or chloric ether, or as mistura chloroformi. [For the remarks of Mr. Clover upon the choice of anæsthetics, see page 58.]

[CHONDRUS—IRISH MOSS.

Chondrus crispus, U. S.

Carrageen is demulcent and nutritive, and is used in decoction (℥ss to Oiij) flavored with lemon, as a *tisane* or drink for the sick. Boiled with milk it makes carrageen blanc mange, an acceptable and nourishing article of diet for an invalid.]

CIMICIFUGA—BLACK SNAKEROOT.

[*The root of Cimicifuga racemosa, U. S.*

OFFICINAL PREPARATION, U. S.

Extractum Cimicifugæ Fluidum. Dose, f℥ss–j (2. to 4. Gm.).

The decoction, although not officinal, has been used to a considerable extent, and with benefit, in the treatment of *chorea* in children. It is sedative and antispasmodic, and in large doses vomits.]

This drug was introduced into practice in this country [England] some years ago by Sir J. Simpson, who praised it highly in *chronic rheumatism*, *lumbago*, and *hypochondriacal depression.* It has been found useful in America as an *emmenagogue*, but has never taken any real hold upon professional attention at home.

Dose of the tincture [Br.], 10 to 30 minims.

CINCHONA—CINCHONA.

[*Syn. Peruvian Bark; Cinchona Bark. The bark of all species of the genus Cinchona, containing at least two per cent. of the proper cinchona alkaloids, which yield crystalline salts, U. S.*

VARIETIES.

Cinchona Flava. The bark of Cinchona calisaya, U. S.

Cinchona Pallida. The bark of Cinchona Condaminea, and of Cinchona micrantha, U. S.

Cinchona Rubra. The bark of Cinchona succirubra, U. S.

OFFICINAL PREPARATIONS, U. S.

Of the Yellow Bark :—

Cinchoniæ Sulphas. Dose, gr. ij–xxx (.12 to 2. Gm.).

Decoctum Cinchonæ Flavæ. Dose, f℥ij–iv (64. to 128. Gm.).

Extractum Cinchonæ. Dose, gr. v–xv (.30 to 1. Gm.).

Extractum Cinchonæ Fluidum. Dose, gtt. v–xv (.30 to 1. Gm.).

Infusum Cinchonæ Flavæ. Dose, f℥ij (64. Gm.).

Quiniæ Sulphas. Dose, gr. ij–xx (.12 to 1.30 Gm.).

Pilulæ Quiniæ Sulphatis (each gr. j).

Tinctura Cinchonæ. Dose, fℨj–ij (4. to 8. Gm.).

Of the Red Bark :—

Decoctum Cinchonæ Rubræ. Dose, f℥ij–iv (64. to 128. Gm.).

Infusum Cinchonæ Rubræ. Dose, f℥ij (64. Gm.).

Tinctura Cinchonæ Composita (Huxham's tincture). Dose, fℨj–ij (4. to 8. Gm.).]

EFFECTS AND USES.

In any comparative estimate of the absolute importance of various drugs to the human species, cinchona would probably take the second place, the first being, by universal consent, accorded to opium. The bark itself, however, is not now of so much importance as in former years, when it was our sole dependable remedy for the poison of ague, and was then given in such enormous quantities as to be very embarrassing to the weak stomachs of feverish patients. This difficulty is now happily removed, and much greater precision and efficiency given to our treatment, by the introduction of quinine, the discovery of which in 1820 inaugurated a true era in therapeutics.

The preparations of cinchona are now used almost exclusively on account of their tonic properties, and in many cases of general debility, want of appetite, and loss of tone, most gratifying results are obtained by their employment either singly or in combination. Quinine itself, however, has a higher and wider therapeutic range, and has in recent years obtained so much of the careful attention of physiologists that we are bound to consider its properties with as much care and precision as the present state of science allows.

LOCAL ACTION.

Quinine is occasionally, although rarely, used as a local application; but the theory of this is so intimately bound up with its internal use, that we need not refer specially to it at present, save to note that an injection of gr. ij ad ℥j has been found of great service in checking the unhealthy secretion of an irritable bladder.

INTERNAL ACTION.

Physiological.

I. *Nervous System.* — 1. *Brain.* — Quinine in large doses causes curious brain symptoms, such as partial blindness, well-marked deafness and ringing in the ears, giddiness, and frontal headache, associated with a peculiarly dull, heavy expression of countenance. Binz has suggested that some at least of these phenomena may be due to partial anæmia of the brain, caused by enfeebled action of the heart. Hammond, on the contrary, asserts that quinine causes congestion of the brain. Gubler asserts that it stimulates the great sympathetic and auditory nerves.

It contracts the uterus.

2. *Spinal System.* — In frogs, quinine acts powerfully

Therapeutical.

I. The subcutaneous injection of quinine has been highly recommended by Surgeon-Major Hall in sunstroke.

This mode of administering the drug, however, is not unfrequently followed by inflammation and even abscess at the seat of puncture. Gubler prefers the bromhydrate to the sulphate, as being less irritating and better adapted for use in this way.[1]

The oxytocic action of quinine must be, in part at least, due to its action on the nervous system; but its undoubted power in contracting the uterus has not yet been much used in medicine. [It appears to be appreciated in the United States. Here it in reducing the reflex irritability of the cord, the animal lying motionless, quite insensible to external impressions, the stillness being only broken by occasional tetanic spasms; but this action is contradicted by the more recent experiments of Binz.

---

[1] A hypodermic injection of sulphate of quinia has caused tetanus. See National Dispensatory, Phila. 1879, p. 1179.

II. *On Vascular System.*—Moderate doses of quinine increase the frequency of the pulse, but, if larger quantities be given, the rate of pulsation falls, the arterial tension diminishes, and death may even ensue from convulsions or sudden collapse following depression of the heart's action.

Quinine has a direct action on the white corpuscles of the blood, checking their amœboid movements, and arresting their tendency to migrate through the walls of the capillaries under inflammatory conditions.

It also prevents, in some degree, the due giving up of oxygen by the red corpuscles, and may thus interfere with the oxygenation of the tissues.

III. *Respiration and Temperature.*—No influence on the respiratory function has been observed. On the temperature of a person in full health but little lowering effect is produced; when fever is present, however, the temperature may be brought down by giving large doses.

is frequently used as a parturifacient in single doses of gr. x–xv.] It has, however, been asserted that it may be injurious to the fœtus.

II. Quinine has therefore some stimulating properties. It has been shown to be a valuable remedy in 8 to 15 grain doses, in combination with potassium iodide in cases of specific and non-specific serpiginous and phagedenic ulceration, after the failure of other remedies.

An essential part of inflammation and suppuration is now known to be extrusion of the white blood corpuscles from the capillaries, and their subsequent transformation into pus-cells. Quinine may therefore be of great service in localized inflammations, and in checking exhausting discharges from abscesses or wounds, and in pyæmia good results have followed its use.

III. The antipyretic properties of quinine are much prized in Germany, and it is there largely used in the treatment of *typhus*, *typhoid*, *acute rheumatism*, and *pneumonia*.

Immense doses, even reaching 75 grains, have been given, and it is observed that

Opinions differ so much as to the explanation of this effect, that it is impossible to speak with any confidence on the question. [According to Henbach the cause of death in animals poisoned with quinia is a paralytic arrest of respiration.]

IV. *On Secretion.* — In moderate doses, quinine increases the secretion of saliva, and augments, like most bitters, the flow of gastric juice, stimulating the appetite at the same time.

If larger quantities, however, are taken, an exactly opposite effect is produced;

tolerance of the drug is undoubtedly present in fever, and that very much larger quantities can be taken than in a state of health. It is only when very freely given, however, that it has any cooling influence; and we are advised to prescribe from 25 to 45 grains in divided doses within the first half hour, and then allow an intermission of from 24 to 48 hours, as the effect would be diminished by spreading it over a longer time, on account of its rapid elimination.

In this country we do not make very extensive use of quinine in febrile disorders, for the resulting diminution of temperature is only temporary, and has no influence on the progress of the disease. When a really dangerous degree of pyrexia is reached, we know that we can hold it readily in check by cold baths. [But where hydropathic treatment is inadmissible, quinia in full doses is an efficient antipyretic.]

IV. Quinine is the best tonic we possess, increasing the appetite, and bracing up the intestinal mucous membrane. It is given, therefore, in all states of the system where debility is present, in simple loss of appetite, in some forms of *dyspepsia*, in *neuralgia*, especially of the hunger is blunted, and the alkaloid, acting as an irritant to the mucous membrane of the stomach, checks the gastric juice. The urine is found to be unaltered in quantity, but the amount of uric acid and probably of urea given off is decidedly diminished.

V. Quinine is an excellent antiseptic, preventing and arresting decomposition. This it does in virtue of its poisonous influence over minute organisms, for we know that the process of decay is caused by the formation and rapid multiplication, within the putrefying fluid, of microscopic bodies called microzymes. Quinine in small doses paralyzes, and in larger, destroys, these creatures, and so at once arrests further destructive action.

Some authorities have been inclined to explain its remarkable influence over ague by theoretically supposing that the essence of the malarial poison really consists in a minute germ or vegetable cell derived from the marshy land where the pestilence breeds, and that the antiseptic property of the drug is here the true explanation of its therapeutic success.

This seems to be borne out by the recent observations of Lanzi and Zerner, who have found an identical fungus in the decaying vegetation of

supra-orbital nerve, in convalescence from acute disease, to arrest the *nocturnal sweating* of phthisis, etc.

V. In virtue of this poisonous influence over protoplasm and minute germs, it has been recommended in large doses in *whooping-cough*, on the ground of destroying the vitality of the thick and tenacious mucus which causes so much irritation in the bronchial tubes, or, as others hold, by destroying the minute fungus on which the disease depends. [Henke.] Again, in *hay-fever*, which is now proved to result from the local action on the Schneiderian mucous membrane of the pollen of particular grasses, Prof. Helmholtz has lately pointed out that quinine applied in the form of snuff or strong solution [gr. j–f℥j], will effect a speedy cure.

the Roman Campana and in the tissues of the victims to malaria.

SPECIFIC ACTION.

Quinine has what, for want of a better explanation, we must call a specific control over all malarial fevers and diseases which display any periodical tendency. Gubler, however, denies all specific influence, and believes that it acts by giving tone to the sympathetic nerve, thus enabling it to resist the attack of the malarial poison. Binz, on the contrary, denies all neurotic explanations, and holds its effects to be due to its paralyzing action on the septic processes caused in the blood and tissues by a ferment from decaying vegetation, whose further chemical development is thus arrested.

Now quinine may act as a prophylactic, and, given in moderate doses at regular intervals, may ward off attacks; and this fact is extensively taken advantage of by African travellers and troops stationed in malarial districts, to whom rations of quinine are invariably served out. When the disease, however, is fairly developed, quinine will keep it in check and even arrest its progress; and this either in smaller doses frequently repeated, or in one considerable dose taken shortly before the attack is expected.

The periodical return of the paroxysms of shivering, heat, and sweating, enables us to calculate with accuracy the very hour of the day at which to expect their recurrence; and experience has determined that the best mode of treatment is to give one full dose of 10 or 20 grains half an hour before the attack comes on.

The remarkable enlargement of the spleen which attends intermittent fever is often so rapidly diminished by quinine as to make it probable that the reduction of bulk is due to an active contraction of the substance of the organ itself.

Another curious point about the action of quinine is, that whilst it may check the rigors and rise of temperature attending the aguish paroxysm, the quantity of urinary water and urea excreted may be as much increased as they always are during the attack.

Quinine is also an invaluable agent in some of those affections which, without belonging directly to the aguish category, have somthing of the intermittent quality impressed on them; for example, we often find that neuralgia and various forms of headache are distinctly periodic, and return at regular intervals. In such cases quinine works wonders and may effect a cure with almost magical rapidity.

MODE OF ELIMINATION.

Quinine, being possessed of considerable diffusive power, rapidly enters the blood, and is rapidly given out. It may be found in the urine in 30 minutes after ingestion; elimination is at its height in 2 or 3 hours, diminishes in 24 hours, and ceases in three days. Although traces of its presence have been found in the saliva, sweat, and intestinal secretion, it is by the urine that the greater part, probably about two-thirds, is given off, and according to some authorities, the sulphate is converted into a different allotropic form, partly amorphous, and quite inert, which has been called quinicine.

DISADVANTAGES OF ITS USE.

In addition to the headache, deafness, ringing in the ears, and other physiological phenomena, already noted, a good many cases have now been recorded of eruptions on the skin. In some of the quinine manufactories abroad, eczematous eruptions are observed in the workmen employed, and its internal administration has been occasionally followed by a bright-red, scarlatinoid rash, accompanied by intolerable itching and smarting and followed by copious desquamation, or, more rarely, by a rubeoloid eruption, rather suggestive of urticaria, and attended with marked gastric derangement, a curious point being that these unpleasant effects have usually followed very small doses, sometimes of only a simple grain. Urinary irritation is also occasionally produced, more especially in the old, and consisting of dysuria, renal congestion, and even hemorrhage. And we must remember that idiosyncrasy here plays an important *rôle*, and that some persons cannot take a single grain without inconvenience.

Therefore, as before advised, it is always well, before prescribing quinine, to ask our patient if he has ever taken it before. If much prostration follows a large dose, strong black coffee is the best remedy.

MODE OF ADMINISTRATION AND DOSE.

This salt is best prescribed in mixtures with a little nitric or dilute sulphuric acid, as tinctures do not dissolve it well; though, as Ringer says, it is really unnecessary to combine acid, as the quinine is readily soluble in the acid of the gastric juice. But a little acid makes a more elegant mixture, by removing that turbidity which a certain quantity of the undissolved alkaloid necessarily imparts to a solution. The dose varies from about gr. j, which is the usual tonic dose, to 10, 20, 30 grains, or even more; and although in this country a larger quantity than 10 grains is perhaps rarely prescribed, it is clearly absurd to put the maximum dose, as in the British Pharmacopœia, so low as this.

A good way of obviating the headache and ringing in the ears, is by adding to each dose ♏xxx of hydrobromic acid, which is also a good solvent.

[As urged by Dr. Alonzo Clark, quinia may be given by the rectum, in the ordinary form of suppositories, with almost if not quite as much efficacy and promptness of action as when given by the mouth. When given in the usual way it is found that to avoid the bitter taste of quinia is absolutely necessary in some cases. For this purpose it is sometimes ordered in sugar-coated pills, or inclosed in *cachêts de pain.* The powder may be given to children in a spoonful of syrup of red orange, or mixed with honey or molasses; it may also be taken in coffee, or simply suspended in cold water, or the powder sprinkled over the cut surface of an orange. The quinia may be enveloped in tissue paper and twisted tightly into a ball; a little practice will enable an adult to deftly swallow such a bolus without tasting, and with but little inconvenience. The aromatic elixir of glycyrrhizin has been recommended as the best vehicle for the administration of the sulphate of quinia;[1] but preparations containing licorice, such as the officinal fluid extract of taraxacum, or the compound licorice mixture, or the elixir of Yerba Santa, are quite satisfactory for this purpose. Tannin has the power of disguising the taste of quinia, and, according to Rolander, it does not detract from its therapeutic properties. The following formulæ will be found useful for the administration of quinia in solution:—

---

[1] Remington, Med. and Surg. Rep., vol. xxxvii. p. 88, Phila., 1877.

For children—

℞. Quiniæ sulphatis	gr. xxiv;	or	1	50 Gm.	
Acidi tannici	ʒij;	"	8	"	
Syr. cinnamomi	f℥iij;	"	96	"	M.

S. Capiat cochleare parvum ter in die.

Or, as the disulphate—

℞. Quiniæ sulphatis	gr. xxiv;	or	1	50 Gm.	
Acidi sulphurici dil.	fʒj;	"	4	"	
Tr. cardomomi co.	fʒiij;	"	12	"	
Syrupi q. s. ad	f℥iij;	"	96	"	M.

S. Dose, fʒj.

Or, in a cough mixture—

℞. Quiniæ sulphatis	gr. xxiv;	or	1	50 Gm.	
Acidi sulphurici dil.	q. s. ad solve;			"	
Mist. glycyrrhizæ co.	ad f℥iij;	"	96	"	M.

S. Dose, a teaspoonful.

In the declining stage of *whooping-cough.*

For adults, any of the preceding prescriptions may be used, or we may give the following:—

℞. Quiniæ sulphatis	gr. xlviij;	or	3	20 Gm.	
Acidi sulphurici dil.	q. s.;			"	
Syrupi limonis	f℥ij;	"	64	"	
Aquæ q. s. ad	f℥vj;	"	192	"	M.

each drachm containing one grain of quinia. A more pleasant preparation would probably be obtained by substituting Curaçoa cordial for the lemon syrup. As a tonic carminative the following proves very acceptable in weakened digestion:—

℞. Quiniæ sulphatis	gr. xlviij;	or	3	20 Gm.	
Acidi sulphurici dil. q. s. ad solve;					
Tr. gentianæ comp.	f℥iv;	"	128	"	
Syr. zingiberis q. s. ad	f℥vj;	"	192	"	M.

S. Capiat cochleare magnum ante cibum.

Wine of aloes may be appropriately added, should constipation be present in the case.]

R. Quiniæ sulphatis	gr. viij;	or		50 Gm.	
Acidi nitrici diluti	fʒss;	"	2	"	
Tincturæ aurantii	f℥ss;	"	16	"	
Syrupi aurantii cort.	f℥j;	"	32	"	
Aquæ q. s. ad	f℥viij;	"	256	"	M

S. Dose, f℥j ter die sumendus.

For a case of debility and want of appetite.

Some persons, who object to sweets, prefer the syrup to be left out; but it will usually be found an agreeable addition. Quinine may also be given in the form of simple powder, suspended in a glass of sherry, and when a large dose, such as 10 grs., is prescribed, it is more conveniently taken in simple suspension in distilled water. A very common plan is to order quinine with acid infusion of roses, but Squire has pointed out that a turbid and unsightly mixture is thus produced from the resulting tannate of quinine being insoluble in sulphuric acid; whereas if the infusion be made with nitric acid, the mixture is "bright and attractive in appearance."

Under the name of Warburg's tincture, a secret preparation of unusual complexity has recently been made public, and has been most highly recommended by Maclean in tropical diseases, and by Broadbent and Playfair in cases of shock and collapse. Under its use free perspiration sets in, and the temperature goes down, and it is believed that the action of the drug is materially aided by the powerful aromatics with which it is combined and the state of concentration in which it is given. Each one-ounce bottle contains 9½ grains of quinine, and it is best given on an empty stomach after preliminary evacuation of the bowels, the ounce being taken undiluted and repeated in 2 or 3 hours.

OTHER PREPARATIONS.

In addition to quinia other alkaloids and substances have been detected in bark, some of which are of use in medicine. We have:—

1. Quinic or kinic acid.
2. Quino-tannic acid.

Quinetum is the collected alkaloids of bark, and has been found to be very efficacious in chronic cases of ague.

3. Cinchona red.
4. Kinovin.

These four have no therapeutic significance.

5. Cinchonia has some febrifuge power [and sulphate of cinchonia can in many cases take the place of quinia as an antiperiodic, at about one-eighth the cost.]
6. Quinidia has been reported as nearly equal to quinine in the foregoing respect [and is an efficient substitute for the more expensive salt.]

7. Cinchonidia is only a little efficacious, but causes an unpleasant dryness of the mouth.

None of these preparations have been able to completely take the place of quinine, as they are weaker, less certain in action, and less agreeable; and quinine, notwithstanding its comparatively high price, still retains its position as our most reliable antiperiodic.

The preparations of cinchona, as we said before, are principally used for their tonic properties; and there is perhaps no more pleasant and effectual medicine of this class than the ordinary tincture of bark, whilst the decoction or infusion is in very general use as a vehicle for more active drugs.

The elixir of cinchona flava, though not officinal, is an elegant preparation, and is much used. [Dose, f℥ss–ij.]

Tinctura cinchonæ composita [Huxham's tincture] contains powdered red bark, bitter orange-peel, serpentaria, saffron, cochineal, and proof spirit. [It is a valuable tonic and stomachic.]

[The bimuriate of quinia with urea is a very soluble form of double salt lately introduced, which has especial advantages for the hypodermatic method.

The relative therapeutic activity of the ordinary alkaloids as compared with each other is thus given by Bartholow:—

Quinidia is entitled to the first rank as an antiperiodic.

Quinia (usually given in doses that are too small).

Cinchonia is about one-half the strength of quinia.

Cinchonidia is a little stronger than cinchonia.

Quinoidine, or chiniodine (amorphous), is about one-fourth the strength of quinia.

The *salicylates* of *quinia* and *cinchonidia* have been introduced, and are especially recommended for *neuralgia*.

Chinolin.—The tartrate and salicylate of chinolin have been recently introduced as substitutes for the cinchona alkaloids, attention having been directed to them, under the name of artificial quinine.

The ordinary commercial chinolin is a reddish-brown liquid, while the tartrate is a white crystalline powder. It often has a disgusting tobacco-like odor, due to some uncombined chinolin or to slow decomposition. Rueber[1] found that by repeated distillations of chinolin made synthetically according to Skraup's method (48 parts nitro-benzole, 76 parts aniline, 240 parts of glycerine, and 200 of English sulphuric acid), he obtained a *colorless*, transparent, oily liquid which remained unchanged after six months, from which a specimen of fine acicular crystals of chinolin tartrate was obtained, which possessed only a faint odor. The salt was insoluble in ether, soluble in 65 parts of alcohol and in 20 parts of water at 15° C.; but water at 100° dissolves six times as great a proportion; the excess afterwards deposits on cooling. The author confirms the experience of Dr. Donath as to the value of this salt as an antiseptic, and asserts that it possesses no properties which would render it deleterious to health when used for the preservation of articles of food.

---

[1] [Monthly Review of Medicine and Pharmacy, translated from Schweizerische Wochenschrift, No. 49.]

The tartrate of chinolin is said to have decided effect in periodical neuralgia and in intermittent fever, in doses of one or two grammes to adults, given in wafers or *cachêts de pain;* it may be given to children in equal parts of syrup and distilled water. Peppermint is recommended as a vehicle for disguising the taste. It is said not to produce tinnitus or other cerebal disorder. In *malaria* it has proved efficient in some cases, but in doses larger than quinia.

The physiological action of the tartrate of chinolin may be summed up as that of a decided apyretic and powerful antizymotic. Dr. Donath declares that it is superior in its antiseptic power to salicylic, boracic, and carbolic acids, or to copper sulphate and alcohol. In the proportion of 0.2 per cent. it arrests fermentation in milk and the development of bacteria; a 0.4 per cent. solution will prevent decomposition of blood or the curdling of milk. When administered internally, it has not been found in the urine, and appears to be decomposed in the system. As a local antiseptic, it has special advantages.]

CINNAMOMUM—CINNAMON.

[*The prepared bark of Cinnamomum Zeylanicum (Nees Laurin), and of Cinnamomum aromaticum (Nees, ibid., U. S.*

Oleum Cinnamomi. Dose, gtt. j–ij (.06 to .12 Gm.).

Officinal Preparations, U. S.

Tinctura Cinnamomi (℥jss to Oj). Dose, f℥j–ij (4. to 8. Gm.).

Aqua Cinnamomi—as a vehicle.

Pulvis Aromaticus (cinnamon and ginger each 2 parts, cardamom and nutmeg each 1 part). Dose, gr. x–xx (.60 to 1.30 Gm.).

Confectio Aromatica (pulv. aromat. and honey).

Spiritus Cinnamomi (oil ℥j in Oj). Dose, fʒi–ij (4. to 8. Gm.).

Also enters into Acidum Sulphuricum Aromaticum, Infusum Catechu Compositum, Spiritus Lavandulæ Compositus, Syrupus Rhei Aromaticus, Tinctura Cardamomi Composita, Tinctura Catechu, and Vinum Opii.]

Cinnamon is principally used for flavoring purposes, but also seems to have slight astringent properties, which make it useful in *diarrhœa*. [It has been also strongly recommended in *uterine hemorrhage*, given in substance, or as a decoction made with milk.]

[COCCUS—COCHINEAL.

The female of Coccus cacti, U. S.

It enters into Tinctura Cardamomi Composita.

Cochineal has been considered to possess antispasmodic and anodyne properties, and has been recommended in *whooping-cough* (gr. $\frac{1}{3}$, s. t. d., to infants) combined with carbonate of potassium. It is also used in *neuralgia*. In pharmacy it is used as a coloring agent.]

[COLCHICUM—MEADOW SAFFRON.

Colchici Radix. *The corm of Colchicum autumnale, U. S.*

Colchici Semen. *The seed of Colchicum autumnale, U. S.*

Officinal Preparations, U. S.

Extractum Colchici Aceticum (of the root), Dose, gr. j–ij (.06 to .12 Gm.).

Extractum Colchici Radicis Fluidum. Dose, ♏ij–iv (.12 to .24 Gm.).

Vinum Colchici Radicis (℥vj to Oj). Dose, gtt. x–xv (.60 to 1. Gm.). As a purgative, ♏xxx (2. Gm.).

Extractum Colchici Seminis Fluidum. Dose, ♏ij–vj (.12 to .40 Gm.).

Tinctura Colchici (of the seeds, ℥ij to Oj). Dose, ♏v to fʒj (.30 to 4. Gm.).

Vinum Colchici Seminis (of the seeds, ℥ij to Oj). Dose, ♏x to ʒj (.65 to 4. Gm.).]

INTERNAL ACTION.

Physiological.

The leading physiological action of colchicum is undoubtedly directed to the intestinal canal, large doses causing free vomiting and copious purging of yellowish feces containing a large quantity of bile. The action of the heart is usually somewhat depressed, and it has been stated that the urinary secretion is augmented, but of this there is no very clear proof.

[Colchicum increases the *proportion* of the urea and uric acid, as well as the amount of urine excreted by the kidneys, according to Prof. Christison, Dr. Maclagan, and others; but, on the other hand, this is denied by Gubler.

The active principle is an alkaloid, *colchicia*, which is from 80 to 100 times stronger than the fresh corm.]

Therapeutical.

As the experiments of Rutherford have shown that colchicum increases the biliary secretion, it may be a useful adjunct to cholagogue pills, although its own purgative action is too violent to be available for this purpose.

Its principal use is as a remedy for *gout*, more especially the acuter forms, and here it never fails to remove pain rapidly, without, however, in any way lessening the tendency to future attacks. How it acts is unknown, and we can only call it a specific. Some good authorities, however, contest this effect, believing it to act merely as a palliative; and that, in order to get its full influence, at least 3 or 4 stools a day must be produced. It is believed to be cumulative. It is also very valuable in various diseases of gouty parentage, as in some forms of *dyspepsia*, *bronchitis*, etc.; but in *acute rheumatism* it has been proved to exert rather a noxious than a beneficial influence.

DOSE AND MODE OF ADMINISTRATION.

Colchicum may be given either in one or two full doses, or in smaller quantities spread over a longer time. Of these plans the former is probably the more effectual in an acute attack of gout. The following formulæ are suitable for various gouty conditions:—

℞.	Tincturæ colchici	♏xx;	or	1	30	Gm.	
	Potassii bicarbonatis	gr. x;	"		60	"	
	Aquæ pimentæ [Br.]	f℥j;	"	32		"	

Misce, fiat haustus ter die sumendus.

℞.	Tincturæ colchici	♏xv;	or	1		Gm.	
	Magnesii carbonatis	gr. vj;	"		40	"	
	Magnesii sulphatis	gr. xxx;	"	2		"	
	Aquæ menthæ piperitæ q. s. ad	f℥j;	"	32		"	M.

S. Pro dosa, ter die sumendus.

[℞.	Ammonii carbonatis	gr. xl.	or	2	60	Gm.	
	Sodii bicarbonatis	ʒiss	"	6			
	Tincturæ colchici	fʒij;	"	8			
	Syrupi aurantii	fʒiv;	"	16			
	Aquæ	q. s. ad f℥viij;	"	256			M.]

S. Capiat unciam bis in die.

℞.	Extracti colchici acetici	gr. x;	or		65	Gm.	
	Pulveris digitalis,						
	Extracti colocynthidis comp.	āā ℈j;	"	1	30	"	

Misce, fiant pilulæ xx. Sumat unam bis terve in die.

℞.	Potassii iodidi,						
	Ammonii carbonatis	āā ℈j;	or	1	30	Gm.	
	Vini colchici	fʒj;	"	4		"	
	Tincturæ scillæ,						
	Tincturæ hyoscyami,	āā fʒij;	"	8		"	
	Aquæ camphoræ	q. s. ad f℥iij;	"	96		"	M.

S. f℥ss ter die.

Dr. Greenhow's formula for gouty bronchitis.

[Scudamore's mixture:—

℞.	Magnesii sulphatis	℥j–ij;	or	32		Gm.	
	Magnesiæ	ʒij, gr. xl;	"	10	60	"	
	Aceti colchici [Br.]	f℥j–jss;	"	32		"	
	Syrupi croci [Br.]	f℥j;	"	32		"	
	Aquæ menthæ pip.	f℥x;	"	320		"	M.

Dose, f℥ss–jss repeated every 2 hours in a paroxysm of gout until from four to six evacuations are produced in the 24 hours.

The Acetum colchici was omitted from the Pharmacopœia in the last revision. It was made from the *corm*, and was only one-third the strength of the officinal wine of colchicum root. In making preparations the fresh seed should be used (*Mols*), as the old seed and its preparations are less active; some samples of fluid extract contain no colchicia at all.] By contact with acids, even those of wine or vinegar, colchicine is transformed into colchiceine, a neutral glucoside of very inferior strength; and alcohol, which has no such converting power, is therefore the best solvent.

[COLLODIUM—COLLODION.

Pyroxylon dissolved in ether and alcohol.

Collodium cum Cantharide. Blistering Collodion.
Collodium Flexile. Flexible Collodion.]

Collodion is used to fulfil two indications :—

1. To exclude the action of the air from inflamed parts, and to prevent the patient from scratching and irritating the surface.	1. For this purpose it is used to paint over the pustules of *smallpox*, in the hope of preventing pitting. Also, in *herpes zoster* and in *erysipelas* it may be applied with advantage.
2. To exert a moderately constringent effect, from the contraction which follows its drying.	2. Dr. Hare tells us that, at the very early or papular stage of a boil, we may avert subsequent suppuration by the application of collodion. [In the early stage of a boil it may be aborted by touching the top with a drop of cantharidal collodion.] Sir D. Corrigan recommends sealing up the extremity of the prepuce by collodion to remedy the nocturnal form of *incontinence of urine* in children; and it may be of service in hemorrhage depending on capillary oozing, and more especially in the troublesome

[Styptic colloid, as it is called, instantly coagulates blood, and wounds heal readily under its protection.[1]]

bleeding frequently following leech-bites.

Finally, its application may facilitate the healing process in small cuts and wounds, as after the operation for harelip, and in the troublesome condition known as cracked nipples. Under all these conditions the best results may be obtained by using the flexible collodion, in which the combination with castor oil prevents the too rapid cracking or peeling away of the protecting film.

COLOCYNTHIS—BITTER CUCUMBER.

[*The fruit, deprived of its rind, of Citrullus Colocynthis, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Colocynthidis (alcoholic). Used only in combination. Dose, gr. ij–v (.12 to .30 Gm.).

Extractum Colocynthidis Compositum. Dose, gr. v–xxx (.30 to 2. Gm.).

Pilulæ Catharticæ Compositæ. Dose, 1–3 pills.]

Physiological Action.

Colocynth produces a good deal of irritation of the large intestine, causing profuse watery evacuations, and, if given in excessive dose, even proving fatal by inflammation and ulceration. It is found, however, that its drastic ac-

Therapeutical Action.

Colocynth is a drastic purgative, rapid and efficient in its action, and much used as an ordinary remedy in *habitual constipation* and various dyspeptic conditions.

Rutherford's recent experiments have proved colocynth tion, as well as the griping to which it occasionally gives rise, may be obviated by combination with aromatics and other purgatives.

---

[1] [Styptic colloid is made by adding to collodion (100 pts.); carbolic acid (10 pts.); tannin (5 pts.); and benzoic acid (5 pts.).—*Proc. Am. Pharm. Assn.*, 1881, p. 64.]

to be a powerful stimulant both of the hepatic secretion and of the intestinal glands.

MODE OF ADMINISTRATION.

Colocynth is rarely, if ever, prescribed alone. The officinal compound extract or pill, containing, in addition, aloes and scammony, is a useful formula; but the best mode of combination is undoubtedly that with either hyoscyamus or belladonna.

[Confectiones.

The officinal CONFECTIONS are:—

Confectio Aromatica
" Aurantii Corticis
" Opii
Confectio Rosæ
" Sennæ.]

CONIUM—HEMLOCK.

[**Conii Folia.** The leaves of Conium maculatum, U. S.
Conii Fructus. The full-grown fruit of Conium maculatum, gathered while yet green and carefully dried, U. S.

OFFICINAL PREPARATIONS, U. S.

Extractum Conii Fructus Fluidum. Dose, ♏j–v (.06 to .30 Gm.). (Seguin says that much larger doses are often well borne.)

Extractum Conii (of the leaves). Dose, gr. j–iv (.06 to .25 Gm).

Extractum Conii Alcoholicum (of the leaves). Dose, gr. j–ij (.06 to .12 Gm.).

Succus Conii.[1] Dose, fʒss–j (2. to 4. Gm.).

Tinctura Conii (℥ij to Oj). Dose, fʒss–j (2. to 4. Gm.).

TEST.—Methyl-conia, the active principle of conium, when liberated from its combinations by potassa, is volatile, and exhales a strong mouse-like or urinous odor. With the vapor of muriatic acid, it forms dense white fumes. The odor of conia is so characteristic, that it can scarcely be confounded with any other poisonous agent.

---

[1] [A very uncertain preparation as commonly dispensed.]

ANTIDOTE.

Atropia has been suggested as a physiological antidote.]

LOCAL ACTION.

Conium has been occasionally used in the form of poultice as an application to cancerous sores or tumors, and it is said that the severe lancinating pain common to these affections may thus be mitigated.

INTERNAL ACTION.

Physiological.

I. *On Nervous System.*—1. *Brain.*—No effect is produced on the brain proper, it having been observed in cases of poisoning, and notably in that of Socrates, and in a patient under Prof. Bennett's care, that the intellectual faculties are quite unimpaired to the last.

Dr. John Harley, however, is of opinion that a considerable portion of the action of conium is expended on the motor ganglia, and more especially the corpus striatum.

2. *Spinal Cord.* — Pure conium has no special influence on the spinal nervous system, but an alkaloid, METHYL-CONIA, which it usually contains, has been proved to cause first exaltation, and finally depression, of the reflex function of the cord. [Dr. Christison thinks

Therapeutical.

I. To this action Dr. Harley ascribes the beneficial influence of conium in *chorea.* Although in many cases we may derive real advantage from this remedy, it often fails, and in order to insure the full amount of benefit we must use large doses, and see that the drug is pure. Dr. Harley also recommends it in the nervous twitchings met with in some cases of hemiplegia. Conium has been given with some benefit in the *convulsions* of children.

"that it acts upon the spinal marrow, directly prostrating the nervous power, producing paralysis of the voluntary muscles, and destroying life by arresting respiration."]

3. *On the Nerves.*—Herein lies the true physiological action of conium. It acts first on the third nerve, causing drooping of the eyelid, dilatation of the pupil, and sluggish and impaired movement of the eyeball. The influence then spreads to all the other motor or afferent nerves. A sensation of weight and enfeeblement of the legs, followed by staggering, is first experienced, and finally total paralysis is developed, the victim being entirely unable to move; and so complete may this become, that asses in Italy which have fed on hemlock have been flayed alive without the possibility of resisting in any way. This paralyzing influence is at first confined to the terminal extremities of the nerves.

The sensory nerves are quite unaffected.

II. *Vascular System.* — No effect is produced on the heart or circulation.

III. *Respiration and Temperature.*—The breathing is at first unaffected, but, as the poisonous action of the drug goes on, the paralysis spreads

[From 10 to 15 drops of the alkaloid has caused death.]

3. Dr. Harley recommends its use in the violent spasm of the orbicularis met with in keratitis, but I have been unable to confirm this after careful trial.

The remarkable power of conium in effecting muscular relaxation would indicate its use in a variety of spasmodic conditions. Thus, in *laryngismus stridulus*, *trismus*, *spasmodic wry neck*, *spasmodic stricture* [*hysteria*, and *insanity*], and perhaps in the reduction of *hernia* and *dislocation* where any contra-indication to the use of anæsthetics exists, it seems worthy of trial; and Dr. Handfield Jones recommends it highly in *paralysis agitans*. It must, however, be confessed that the therapeutical success of conium by no means comes up to its physiological promise. [Dr. Seguin, of New York, explains its failure by the smallness of the quantity usually ordered. In chronic convulsive disorders he gives as much as a drachm at a dose and never less than twenty minims for adults. In the latter amount he gives it as to the respiratory centre, and death ensues from asphyxia.

Some lowering of the temperature has been observed.

IV. *Secretion.*—No influence on secretion has been noted.

an indirect hypnotic, in combination with bromide of potassium. From these truly extraordinary doses of the fluid extract he claims never to have had any serious or threatening symptoms produced.]

Dr. Crichton Brown has seen good results from the use of conium in mania with violent motor excitement, in which it restrains the violent muscular movements; and Dr. R. Burman has used conia by subcutaneous injection successfully in the same class of cases.

MODE OF ELIMINATION.

The presence of conium has been detected in the blood, and its elimination is effected by the breath and urine, but principally by the latter.

MODE OF ADMINISTRATION, CAUTIONS, ETC.

It having been satisfactorily proved that the succus is the only reliable preparation of hemlock, it is not necessary for us to say anything about the tincture, extract, vapor, or compound pill. Unfortunately, however, it is often difficult to obtain an efficient succus, as it keeps ill, and cannot always be satisfactorily made. This is no doubt due to the fact of the cultivated plant being used, which is quite inert. Disappointments frequently occur both from this cause and from the smallness of the dose often given in accordance with the recommendation of the Pharmacopœia. In order to obtain any decisive effect we must give of some preparations, as much as from half an ounce to 3 or even 4 ounces, as has been done by Dr. Harley, remembering that the limit of safety is reached when any interference with involuntary movement is observed, this being best indicated by enfeeblement of deglutition.

Children bear conium remarkably well. I have given ounce doses to a girl of eight, and the late Dr. Anstie prescribed even larger quantities to a younger child, without the slightest development of physiological symptoms. [On account of the uncertainty of the strength of juice, it is best to begin with small doses, and carefully increase them until some paralytic effect is produced. Death has been caused by 150 minims of Squibb's fluid extract. Attention has been called by Dr. Squibb to the danger of diluting the fluid extract, for a precipitate may be formed containing the active principle, and by this means a poisonous dose may finally be given. He had seen serious symptoms but never fatal accident from this cause.—*Trans. Med. Soc. State of New York*, 1882.[1]]

The alkaloid conia has been occasionally used by subcutaneous injection, but is objectionable from being very variable in strength. When injected pure it is not only quite inert (therapeutically) but very irritating (John Harley), and the addition of acetic or hydrochloric acid is necessary to insure physiological action.

For Hypodermic Injection.

℞. Coniæ	ʒiij, ♏xij;	or	12	80 Gm.	
Acid. acetic. fort.	ʒiijss;	"	14	"	
Spt. vin. rect.	fʒj;	"	4	"	
Aquæ destillat. q. s. ad	fʒij;	"	64	"	M.

Five minims of this solution contain one minim of the alkaloid, the dose being $\frac{1}{10}$ to $\frac{1}{3}$ of a minim. [The dose of Conia is about gr. $\frac{1}{60}$.]

COPAIBA—COPAIBA.

[*The oleo-resin of Copaifera multijuga (Hayne) and of other species of Copaifera, U. S.*

Dose, ♏xv to ʒj (1 to 4 Gm.).

Officinal Preparations, U. S.

Oleum Copaibæ. Dose ♏viij–xv (.50 to 1 Gm.).
Pilulæ Copaibæ (each contains gr. ivss). 3–5 pills.]

Local Action.

Physiological.	*Therapeutical.*
Copaiba locally applied seems to act as a slight stimulant to the skin.	It has been used in this way in certain obstinate affections of the skin, such as

---

[1] Medical News, 1882, p. 164.]

psoriasis; and in India it seems to have been employed with some success in *leprosy* and *lupus*, bearing as it does a considerable analogy to the gurjun oil which has lately acquired so high a reputation in the treatment of the first-mentioned disease. Its nauseous smell, however, must always be a serious barrier to its use.

CONSTITUTIONAL ACTIONS.

1. *Brain and Nervous System.*—No influence is exerted by copaiba on the brain, spinal cord or nerves.

II. *Heart and Circulation.*—No effect is produced on these organs, or on the respiration and temperature.

III. *Digestive and Secreting Organs.* — 1. *Stomach and Intestines.*—Copaiba frequently causes most violent vomiting and purging.

2. It has a stimulating effect on mucous membranes generally, but more especially on those of the genito-urinary tract, in virtue of which, after slight preliminary irritation, it checks and finally arrests excessive discharges.

3. *Kidneys.*—Copaiba, and more particularly the resin, increases very considerably the water of the urine without specially affecting the solid constituents.

4. Copaiba, by internal

Copaiba is an excellent remedy (1) in *gonorrhœa*, where it may be given with great effect as long as the discharge continues thick and puriform. When the earliest inflammatory symptoms have been subdued by alkalies and diluents, it will prove our best remedy, and it seems to act neither purely locally nor constitutionally, but in both ways conjointly, being altered in some way in the blood, and then exerting a topical influence on the administration, seems to stimulate the skin, and occasionally produces an eruption of bright red papules, not unlike measles, usually beginning on the hands, spreading over the body, and causing much tingling and itching.

affected mucous tract. (2) It is also of service in *chronic cystitis*, and in the later stages of bronchitis, when profuse and exhausting discharges have been established from the bronchial tubes. (3) As a diuretic, the resin has been most highly praised by Dr. Wilks and Dr. F. Taylor in the *dropsy* of heart disease, in *ascites*, and in some forms of *renal affections*. (4) Dr. Liveing, more especially, has drawn attention to the value of copaiba in *psoriasis* and other obstinate skin diseases.

Absorption and Mode of Elimination.

Copaiba is very rapidly absorbed into the blood, as indicated by the communication of its nauseous smell to the breath and urine, by which channels it is principally eliminated. On the addition of nitric acid to the urine of patients taking copaiba, a milky appearance is produced by precipitation of the resin, and this is distinguished from albumen by the action of heat, which melts the resin and removes the deceptive cloud.

Peculiarities. Mode of Administration.

The digestive disturbance occasionally caused by copaiba prevents some persons from taking it at all, and the almost invincibly nauseous nature of its flavor and odor is a serious drawback to its use. Capsules both of sugar and gelatine have been devised, which are frequently well borne; but we must remember not only that these are often too large to be swallowed with comfort by nervous persons, but that their use is apt to be followed by disagreeable eructation. No means have been proposed to obviate the measly and irritable rash which not unfrequently appears on the skins of patients under the influence of copaiba; but various forms of prescriptions are in general use, and some of these are moderately effectual in concealing the offensive flavor of this useful drug.

℞.	Copaibæ	f ʒss;	or	2	Gm.	
	Liquoris potassæ	f ʒss;	"	2	"	
Misce, agitando, et adde—						
	Mucilaginis acaciæ	fʒ ij;	"	8	"	
	Spiritus ætheris nitrosi	f ʒss;	"	2	"	
	Tincturæ opii	♏v;	"	30	"	
	Aquæ menthæ pip. q. s. ad	f℥j;	"	32	"	M.

Fiat haustus ter die sumendus.

For *gonorrhœa.*

℞.	Copaibæ	f℥ss;	or	16	Gm.	
	Syrupi tolutani	f℥ss;	"	16	"	
	Pulveris acaciæ	℥ss;	"	16	"	
	Acidi sulphurici aromat.	f ʒss;	"	2	"	
	Aquæ destillatæ	f℥vj;	"	192	"	M.

S. f℥ss ter in die.

For *gonorrhœa.*

℞.	Resinæ copaibæ	ʒiij;	or	12	Gm.	
	Alcoholis	f ʒv;	"	20	"	
	Chloroformi	f ʒj;	"	4	"	
	Mucilaginis acaciæ	f℥ij;	"	64	"	
	Aquæ q. s. ad	f℥xij;	"	384	"	M.

S. Capiat semunciam ter in die.

Formula for copaiba as a diuretic.

[COPTIS—GOLDTHREAD.

Coptis trifolia, U. S.

Goldthread is an indigenous bitter tonic resembling quassia, for which it may be substituted. It may be given in substance (gr.x–xxx, or .60 to 2. Gm.), or infusion (℥j–Oj) (dose, f℥j–ij, or 32. to 64. Gm.), or tincture (℥j–Oj) (dose, f ʒj–ij, or 4. to 8. Gm.). It contains berberina, but no tannin nor gallic acid, being a simple bitter without astringency.]

[CORIANDRUM—CORIANDER.

The fruit of Coriandrum Sativum, U. S.

Enters into Confectio Sennæ, Infusum Gentianæ Compositum, Infusum Sennæ, and Tinctura Rhei et Sennæ.

USES.

Coriander seed is aromatic and stomachic (dose, ℈j to ℥j, 1.60 to 32. Gm.); it is rarely used except in combination.]

[CORNUS FLORIDA—DOGWOOD.

The bark of Cornus Florida, U. S.

OFFICINAL PREPARATIONS.

Decoctum Cornus Floridæ. Dose, f℥ij (64. Gm.).

Extractum Cornus Floridæ Fluidum. Dose, fʒss (2. Gm.).

Dogwood is an indigenous, astringent tonic, and has been recommended as an antiperiodic as a substitute for cinchona.]

CREASOTUM—CREASOTE.

[A peculiar substance obtained from wood-tar, U. S.

OFFICINAL PREPARATIONS, U. S.

Aqua Creasoti (♏iij¾ to f℥j). Dose, fʒss–iv (2. to 16. Gm.).

Unguentum Creasoti (fʒss to lard ℥j).]

This drug [dose, gtt. i–ij (.06 to .12 Gm.), diluted] is now but little used [owing to the difficulty of obtaining it pure, the commercial article being largely contaminated with cresylic or carbolic acid;] but is a useful remedy in some forms of sickness and vomiting, as an inhalation for *ozæna* and various lung diseases with *fetid expectoration*, and as a local application in *toothache*.

The mistura creasoti [Br.], containing ♏j to the ounce, is a convenient mode of administration. [The ointment is used in *scaly eruptions*.]

[CRETA—CHALK.

Native friable carbonate of calcium, U. S. (for preparations, see Calcium).]

[CROCUS—SAFFRON.

The stigmas of Crocus sativa, U. S.]

Saffron is never used, save as a coloring agent.

CUBEBA—CUBEB.

[*The unripe fruit of Cubeba officinalis (Miquel), Piper Cubeba (Linn.), U. S.*

Dose of the powder, gr. xx to ʒij (1.60 to 8. Gm.).

OFFICINAL PREPARATIONS, U. S.

Extractum Cubebæ Fluidum. Dose, fʒss–ij (2. to 8. Gm.).

Oleo-Resina Cubebæ (8 times the strength of the powder). Dose, ♏x–xxx (.60 to 2. Gm.).

Oleum Cubebæ. Dose, gtt. v–xij (.30 to .80 Gm.).

Tinctura Cubebæ. Dose, fʒss–ij (2. to 8. Gm.).

Trochisci Cubebæ (each contains gtt. j of the oleoresin).]

Physiological Action.	*Therapeutical Action.*
Cubebs also has a stimulating action on mucous membranes, and more particularly on that of the bladder and urethra. In large doses it causes considerable gastro-intestinal irritation.	Cubebs is occasionally used in *cystitis*, but it has long been known as one of the most efficient and generally prescribed remedies for *gonorrhœa*, acting best during the acute stage of the disease. It has also been found useful when given in the form of lozenges for the relief of relaxed sore-throat.

CUPRUM—COPPER.

[**Cupri Subacetas.** Impure subacetate of copper, U. S.

Cupri Sulphas. Sulphate of copper, U. S.

Cuprum. Copper wire, U. S.

Copper is used in preparing Sp. Ætheris Nitrosi.

OFFICINAL PREPARATION, U. S.

Cuprum Ammoniatum. Dose, gr. ¼–½ (.015 to .03 Gm.).

POISONING.

The salts of copper in large doses cause vomiting, pain in the bowels, cramps in the lower extremities, a strong coppery taste, diarrhœa, convulsions, palsy, insensibility, and death. Marks of inflammation in the stomach and intestines are often noticed after death. When the case has been protracted, there is often a green tinge of the lining membrane, and a jaundiced appearance of the skin.

TESTS.

The sulphate in a solid state presents a bright blue color, and leaves an astringent metallic impression on the tongue. When in solution the transmission of sulphuretted hydrogen affords a brownish-black (sulphuret of copper) precipitate. Solution of ammonia precipitates a blue substance, which, on further addition of ammonia, becomes dissolved; but when only a small amount of the poison is present, no precipitation occurs, a clear violet-colored solution being then at once presented. Ferrocyanide of potassium throws down a reddish-brown (ferrocyanide of copper) precipitate. A piece of polished zinc or iron (as the blade of a table knife) acquires a plating of copper, if placed in a liquid containing the above salt.

The tests for the acetate are the same as the preceding, except the last.

The ammonio-sulphate has a brilliant violet-blue color, and ammoniacal odor. Solution of arsenious acid produces a fresh apple-green precipitate.

ANTIDOTES.

Albumen, ferrocyanide of potassium, followed by prompt evacuation of the stomach. Vomiting should be promoted by copious draughts of warm water, milk, or mucilaginous fluids. Sugar was formerly recommended. Albumen and milk form an insoluble compound with copper, provided they are in large excess. The protosulphuret of iron, and iron filings, have also been employed with advantage; but their action is too slow. The hydrated oxide of iron has been successfully administered where the arsenite of copper has been taken.]

LOCAL ACTIONS.

Physiological.	*Therapeutical.*
Copper has caustic astringent properties both in substance and in solution.	In the form of the familiar blue-stone, or sulphate of copper, it is used as an application to *venereal sores*, *ulcers* in the throat, *granular lids*, to check exuberant granulations, etc.; and in solution it is a good lotion for various ulcerative surfaces, *gleet*, etc.

INTERNAL ACTIONS AND USES.

Physiological.	*Therapeutical.*
1. *Brain and Nervous System.*—Copper probably acts in some measure as a nervine tonic, but when given in larger doses peculiar symptoms set in, not unlike those of lead poisoning, and consisting of headache, neuralgic pains, cramp, and even paralysis.	1. Copper has been used in small doses in *chorea*, *epilepsy*, etc., but with no specially marked benefit, and it has been recommended lately in small doses, as an excellent tonic in defective nutrition.
2. *Circulation and Respiration.*—No special effect.	
3. *Secreting Organs.*—Copper causes prompt and effectual evacuation of the contents of the stomach, acting as a direct emetic. It has an astringent influence over the stomach and intestines, and this, if pushed too far, may end in gastro-enteritis.	3. Copper is not so much used, however, for an emetic, as sulphate of zinc, because, if by any chance it be not rejected by vomiting, it is liable to cause inflammation of the stomach. Sulphate of copper is a good astringent in advanced and *obstinate diarrhœa.*

MODE OF ELIMINATION.

Copper is eliminated chiefly by the liver and kidneys, the intestinal canal, and the salivary glands.

METHOD OF ADMINISTRATION.

As already seen, copper may act as a poison by causing inflammation of the stomach and intestines, as well as remote nervous symptoms.

Sulphate of copper is the only salt of the metal used in medicine, and may be prescribed as follows:—

℞. Cupri sulphatis,				
Pulveris opii, āā	gr. ss ;	or	03 Gm.	
Extractum gentianæ	gr. iij ;	"	20 "	M.

Misce, fiat pilulæ nocte maneque sumenda.

In a case of *obstinate diarrhœa.*

[As an emetic, sulphate of copper is given in doses of gr. ij–v (.12 to .30 Gm.).]

[Decocta.

The officinal DECOCTIONS are—

Decoctum Cetrariæ
" Chimaphilæ
" Cinchonæ Flavæ
" Cinchonæ Rubræ
" Cornus Floridæ
" Dulcamaræ
Decoctum Hæmatoxyli
" Hordei
" Quercus Albæ
" Sarsaparillæ Comp.
" Senegæ
" Uvæ Ursa.]

DIGITALIS—FOXGLOVE.

[*The leaves of Digitalis purpurea, from plants of the second year's growth, U. S.*)

Dose, in substance, gr. ss–ij (.03 to .13 Gm.).

OFFICINAL PREPARATIONS.

Extractum Digitalis. Dose, gr. $\frac{1}{4}$–$\frac{1}{2}$ (.01 to .03 Gm.).

Extractum Digitalis Fluidum. Dose ♏j–ij (.06 to .12 Gm.).

Infusum Digitalis (ʒij to Oj). Dose, fʒij–iv (8. to 16. Gm.).

Tinctura Digitalis (℥ij to Oj). Dose, ♏v–x (.30 to .60 Gm.).

Digitalinum[1] (active principle). Dose, gr. $\frac{1}{60}$ (.001 Gm.)].

[[1] The investigations of Homolle demonstrated that the officinal digitalin is a mixture of several compounds of which *digitoxin* is crystallizable, and is the most active constituent.]

POISONOUS EFFECTS.

Digitalis kills by tetanizing the heart muscle, causing rapid and irregular action, followed by arrest of action. The face grows pale, the pupils dilate, vomiting and diarrhœa supervene, and death usually occurs by syncope. Cases of poisoning, however, are rare, and most of our knowledge under this heading has been derived from experiments on animals.

ANTIDOTES.

After evacuation of the stomach and the administration of tannin, we must obviate the tendency to death by stimulants, and by keeping the patient rigidly to the horizontal posture, as syncope is readily excited by suddenly sitting up.

Aconite and atropia have been recommended as physiological antidotes, but we have as yet no evidence of their efficacy.

LOCAL ACTION.

Physiological.

Digitalis has been said to possess sedative properties when locally applied, and there is no doubt that it is rapidly and efficiently absorbed by the skin.

Therapeutical.

Digitalis has been used as a local sedative in cases of *joint inflammation;* and the application to the legs of spongio-piline soaked in a strong infusion has been found to produce diuresis where other remedies have failed.

CONSTITUTIONAL ACTION.

I. *Brain and Spinal Cord.*—On the brain no direct effect is produced, but the reflex irritability of the spinal cord seems to be somewhat lessened under the toxic action of the drug.

Stimulation of some portions of the vaso-motor and pneumogastric nerves seems to take place, as we shall ex-

I. Although no direct action is produced on the brain tissue, it is reasonable to suppose that some alteration in cerebral function may follow the alterations in the vascular system produced by digitalis, and perhaps this may in part explain the remarkable results obtained by Mr. Jones, of Jersey, in the treatment of plain more fully when treating of the influence of digitalis over the heart.

II. *Heart and Circulation.*—Digitalis exerts a decidedly tonic and strengthening influence on the heart, rendering its beat slower and more forcible, and lengthening the period of systole. This result seems to depend partly on a direct action on the heart's muscle itself, but also in some degree on stimulation of the cardiac inhibitory fibres of the vagus, which thus hold more forcibly in check the rapid rate of pulsation produced by the sympathetic nerves. If, however, the administration of the remedy be too long continued, exhaustion of the pneumogastric is apt to follow this over-stimulation, and the heart, being now handed over to the unrestrained power of the vaso-motor nerve supply, runs riot in excessively rapid and feeble contractions.

The tonic influence of digitalis is attended by well-

delirium tremens by the use of this drug. He found that half-ounce doses of the tincture quieted the delirium, reduced fever, and caused sleep. But this treatment can hardly be recommended, as several sudden deaths have been thus produced, and as it seems not improbable that the absence of toxic effects in many cases is due to the very partial absorption of the remedy.

II. The undoubted effect of digitalis in slowing and strengthening the action of the heart, would seem to indicate its use in certain diseased conditions of the organ, but it is only recently that this tonic influence has been recognized. In former years digitalis was looked upon as essentially a cardiac sedative, and was used to quiet the tumultuous palpitation of hypertrophy; but we now know that it may be prescribed with much greater success under the following circumstances:—

1. In *palpitation* and *irregular action of the heart*, whether depending on organic disease or not, an important indication for its use being intermittence, or the occurrence of frequent beats which do not reach the pulse.

2. In *mitral disease*, where the cardiac action is feeble, and apparently unable effect-

arked rise of arterial ten-
on, and this is supposed to
pend on stimulation of the
mpathetic centres directly
pplying the smaller vessels;
d at the same time the heart
induced to act more power-
lly, to overcome the in-
eased resistance in front.

ually to propel the blood, where lividity and dropsy are setting in, the lungs becoming engorged, and the right heart oppressed.

Here we shall derive the most signal service from digitalis given in moderate doses, and combined with a little iron. Dr. B. Foster ascribes some of the good effect of digitalis in mitral disease to its slowing action, giving more time for the auricle to empty itself fully of its contained blood.

The contracting effect of digitalis on the arterioles would naturally suggest its use in *hemorrhage*, and it has accordingly been found of service both in *hæmoptysis* and *menorrhagia*, although in neither is it so efficacious as ergot.

3. In *dilatation of the heart*, where the weak and thin muscle acts feebly and irregularly, giving rise to palpitation and breathlessness, and causing temporary *bruits* by unequal and ineffectual closure of the mitral and tricuspid valves.

4. In *aortic disease*, when compensation has not been made complete by hypertrophy.

In short, we may use digitalis whenever the heart is acting feebly and irregularly, but by its use we cannot expect to spur on a normally

III. *Respiration and Temperature.*—On respiration no effect is produced, and although, in a state of health, digitalis does not lower the body heat, it undoubtedly possesses this influence over febrile conditions, Wunderlich and others bringing ample evidence to prove its power of reducing temperature in pneumonia, enteric fever, acute rheumatism, and other acute disorders.

Bing holds that digitalis is no trustworthy antipyretic, as its action does not begin for thirty-six to sixty hours

constituted heart with sound muscle to overcome difficulties in front, and we must avoid its regular use in the compensatory hypertrophy of aortic disease, and in *fatty degeneration*, where its tightening effect on the smaller vessels throws an injuriously-increased amount of work on the structurally-damaged organ.

5. Ringer has drawn attention to the beneficial action of the temporary use of digitalis in relieving the distressing attacks of *palpitation* so often due to hypertrophy of the heart.

6. Clifford Allbutt believes it to be the best remedy for aneurism, given in increasing doses, till the pulse comes down to 45, and continued as long as possible.

III. Digitalis has been found of great service in those cases of *bronchitis* which are so frequently associated with a weak and dilated right heart, and where stimulation of the cardiac muscle leads to a better arrangement of circulation through the lungs.

For the reduction of temperature, digitalis is seldom used in this country, but in Germany its antpyretic virtues are prized. It seems, however, to lower the body heat without influencing the course of the disease; and as it must be given in large

(Traube), and as it is uncertain and disturbs digestion.

IV. *Digestive and Secreting Organs.*—1. *Stomach and Intestines.*—From its bitter taste, digitalis might be credited with some tonic properties; but it is really much more likely to disorder than to increase the appetite, by causing vomiting.

It does not seem to affect the intestinal tract in any way, save in the later stages of poisoning, when diarrhœa may supervene.

2. *Kidneys.*—Digitalis increases, under certain conditions, the flow of urine without altering in any essential respect the quantity or proportion of its solid ingredients. Its diuretic action depends partly on the tightening effect on the arterioles, raising the blood pressure in the renal glomeruli, and partly on the increased power and regularity of the heart, improving the general condition of circulation within the kidneys. One curious point in this connection is, that digitalis will seldom produce diuresis in healthy persons, but always acts best when dropsical accumulations have to be removed.

doses, which may derange the digestive functions, even if they do not prove directly dangerous, there does not seem to be any real benefit following its employment.

2. Digitalis is a good diuretic, more especially in *cardiac acute* and *renal dropsy*, and acts best in combination with squill and mercury, as in the famous Guy's pill. The theory of this action, depending on heightened blood pressure within the Malpighian tufts, explains the frequent failure of digitalis to augment the quantity of the urine in chronic kidney disease, where the arterial tension is already high.

V. *Uterus.*—Digitalis, from its action on unstriped muscular fibre, has the property of stimulating the uterus to contraction.	V. It has, therefore, been used to contract the uterus, and thus check flooding or *menorrhagia*, and it may also act by restoring its normal functions when these are suspended, as in *amenorrhœa.*

Cautions, Mode of Administration, etc.

In prescribing digitalis, we are generally advised to suspend its use from time to time, lest "accumulation" lead to poisonous symptoms; and experience must have shown us that, after its prolonged use, uncomfortable symptoms do arise. This may be due to elimination from the kidneys being prevented in some measure by the contracting influence of the drug on the renal arteries. [See Physiological Effects, p. 261.] It is advisable, whilst prescribing the drug, to examine the urine from time to time, so as to satisfy ourselves that the eliminating functions of the kidneys are being properly performed.

[The well-known variability in the activity of different specimens is due in some cases to falsification of the leaves, and in other cases to carelessness in gathering them. "Good digitalis must be collected when the plant is in full flower, selecting only the large lower and root-leaves. The midribs of the larger leaves should be removed before using them."*]

As regards the best form for its administration, the freshly made infusion is usually preferred.

℞.	Tinct. digitalis	♏x;	or		65	Gm.	
	Sp. æth. nit.	f℥ss;	"	2		"	
	Inf. buchu	f℥j;	"	32		"	M.
S.	Ter in die.						

Recommended by Fothergill in *simple cardiac debility* with scanty flow of urine.

℞.	Pulv. digitalis	gr. xxx;	or	2		Gm.	
	Ferri sulph. exsic.	gr. xv;	"	1		"	
	Pulv. capsici	gr. xl;	"	2	60	"	
	Pil. aloës et myrrhæ	ʒij.	"	8		"	M.
	In pil. lx. div. Una bis in die.						

[* Proc. Am. Phar. Assoc. 1881, p. 137.]

Recommended by Fothergill in *cardiac debility*, *gastric catarrh*, and *inactivity of the bowels*.

℞.	Tinct. ferri chloridi	♏xv;	or	1	Gm.	
	Glycerinæ	fʒj;	"	4	"	
	Infusi digitalis	fʒij;	"	8	"	
	Syrupi limonis	fʒij;	"	8	"	
	Infusi calumbæ q.s. ad	f℥j;	"	32	"	M.
S.	Ter diē sumend.					

Cardiac tonic.

DULCAMARA—BITTERSWEET.

[*The young branches of Solanum Dulcamara, U. S.*

Officinal Preparations, U. S.

Decoctum Dulcamaræ (℥j to Oj). Dose, f℥ss–ij (16. to 64. Gm.).

Extractum Dulcamaræ (alcoholic). Dose, gr. x–xx (.65 to 1.30 Gm.).

Extractum Dulcamaræ Fluidum. Dose, fʒss–ij (2. to 8. Gm.).

Dulcamara is a feeble narcotic, formerly recommended in *mania*, *rheumatism*, and *cutaneous diseases*. At present it is never used to any great extent in regular practice.]

ELATERIUM—SQUIRTING CUCUMBER.

[*A substance deposited by the juice of the fruit of Momordica elaterium, Ecbalium agreste* (*Richard*), *U. S.*

Elaterium. Dose, gr. $\frac{1}{4}$ (.015 Gm.). (Dose of Clutterbuck's elaterium, gr. $\frac{1}{8}$.)

Elaterin (not officinal). Dose, gr. $\frac{1}{16}$–$\frac{1}{12}$ (.004 to .005 Gm.).]

Physiological Actions.

Elaterium produces irritation of the intestine, ending in inflammation where incautiously pushed, and causes the evacuation of large quantities of watery fluid. It purges equally powerfully

Therapeutical Effects.

Elaterium is the most powerful hydragogue cathartic with which we are acquainted, and as such has been used to withdraw watery fluids from the intestines in various forms of *cardiac dis-*

when injected below the skin or taken by the mouth, but it is stated that solution in the bile is necessary to develop its full action. In some of the lower animals, peculiar nervous symptoms follow its use, and vomiting and great depression are liable to be produced in the human subject even by moderate doses. [It is probably our most efficient cathartic, in the treatment of *dropsical diseases*, especially after the failure of other remedies.] *ease*, lightening the labors of the heart by lessening the volume of the blood, and relieving the cellular tissue and various cavities of dropsical accumulations. As, however, it is uncertain and very depressing in its action, it is now rarely used, in comparison with compound jalap powder, which seems to fulfil the same useful indications without an equal chance of seriously weakening the patient.

[Emplastra.

The officinal Plasters are—

Emplastrum Aconiti
" Ammoniaci
" " cum Hydrargyro
" Antimonii
" Arnicæ
" Assafœtidæ
" Belladonnæ
" Ferri
" Galbani Compositum
Emplastrum Hydrargyri
" Opii
" Picis Burgundicæ
" " Canadensis
" " cum Cantharide
" Plumbi
" Resinæ
" Saponis.]

ERGOTA—ERGOT.

[*The sclerotium of Claviceps purpurea* (*Tulasne*), *replacing the grain of Secale cereale, U. S.*

Officinal Preparations, U. S.

Extractum Ergotæ Fluidum. Dose, ♏x–fʒj (.65 to 4. Gm.).

Vinum Ergotæ (f℥ij fld. ext. in Oj). Dose, fʒss–ij (2. to 8. Gm.).

(**Ergotine**—not officinal, is a purified extract. Dose, gr. v–x=.30 to .65 Gm.)]

EXTERNAL ACTION.

Ergot has no local action.

INTERNAL ACTIONS.

Physiological.	*Therapeutical.*
1. *On Nervous System.*—No special action on any part of the nervous system has been proved. [Beyond the condition of comparative anæmia of the nerve-centres caused by contraction of the vessels.]	1. Dr. Brown-Séquard advises the use of ergot in some forms of *paraplegia*, unattended by irritation, and where inflammatory symptoms have subsided, believing that it acts well by contracting the dilated vessels. Dr. Crichton Browne has recently prescribed ergot with success in some forms of *chronic mania.* [It has been used in whooping-cough, with asserted good results.]
2. *On Vascular System.*—Ergot slightly depresses the action of the heart, and reduces the number of its pulsations, and it is said that the arterial tension is at first lowered in some slight degree. This effect, however, rapidly passes away, and a decided rise in arterial tension follows the contracting influence of the drug on the arterioles. On examining the web of an ergotized frog's foot, we may distinctly observe the gradual contraction of the smaller vessels up to absolute obliteration of their calibre; and this is believed to be due to a primary action of the ergot on their muscular walls rather than to the intervention of	2. Ergot is now allowed to be by far the best astringent in cases of *internal hemorrhage*, and more especially in *menorrhagia*, *hæmoptysis*, and *epistaxis*, the use of the liquid extract having quite superseded the older treatment by means of acids, gallic acid and the like, whilst, if a more rapid action is required, we may subcutaneously inject ergotine. [It has also been injected into internal hæmorrhoids with success.] It is also a valuable remedy in *purpura.* Von Langenbeck, of Berlin, has advocated the injection of ergotine for the obliteration of *aneurismal sacs*, but sufficient evi-

the vaso-motor system. Thus we observe a direct contrast to the action of the nitrite of amyl.

3. *Respiration and Temperature.*—No special action.

4. *Urinary Functions.*—Ergot, from its specific action on unstriped muscular fibre, tends to contract the bladder, and, by raising the tension in the Malpighian bodies of the kidneys, it increases the urinary flow.

5. *Digestive Organs.*—Ergot occasionally causes sickness, vomiting, and diarrhœa; but constipation is more likely to follow its use, from its contracting influence on the intestinal capillaries.

dence has not yet been brought forward of the success of this practice; and it has also been advised in the case of old *varicose veins.* The gangrenous form of ergotismus is doubtless due to arterial contraction cutting off the supplies of blood to the extremities. [Probably it is through this influence upon the circulation that it is useful in diabetes insipidus, as first suggested by Dr. Da Costa, who also uses it with good results in albuminuria, and also in the excessive sweating of phthisis.]

4. Ergot has been used successfully, and more especially when combined with iron, in that most troublesome affection, *incontinence of urine*; but, in my own experience, belladonna is more deserving of confidence. Ergot has been recommended as a diuretic. Langenbeck has much faith in subcutaneous injection of ergotine in the atony of the bladder and enlarged prostate, met with in the old.

5. Ergot has been successfully prescribed in cases of *diarrhœa* and *dysentery.*

6. *Uterine Functions.*—Ergot has a remarkable and almost selective influence on the uterus, contracting its muscular walls, promoting its functions, and encouraging the expulsion of its contents.	6. Ergot acts as an ecbolic, expelling the contents of the uterus by causing contraction of its muscular walls. It must only be used, however, where no disproportion exists between the child and the maternal passages, and where we are prepared to render instrumental aid at once, if necessary, when the pains have been aroused. We must also remember that its prolonged use is apt to endanger the life of the child by cutting off its supplies of blood through the placenta. Ergot is also of service in *flooding*, in reducing the size of hypertrophied or subinvoluted wounds, and in promoting the destruction of *submucous polypi*, either by cutting off their supply of blood, or by squeezing them out of the uterine cavity. It is also an excellent remedy for *amenorrhœa* and some forms of *leucorrhœa*.

Mode of Administration, Dangers, Cautions.

In those countries where ergotized rye largely prevails, two forms of disease attend its use. 1. The gangrenous form of ergotismus, where extensive dry gangrene of the nose, face, and extremities supervenes; and, 2. The spasmodic variety, where the victim is afflicted with most violent and agonizing spasms. [There is room for the suspicion that in those places where *ergotism* occurs, the general hygienic conditions are often more at fault than the ergot itself.] The therapeutic use of ergot, however, is of course never productive of any such symptoms, and the only incon-

venience occasionally observed is some digestive derangement with colicky abdominal pain.

In addition to those named, the three following preparations are officinal in the British Pharmacopœia:—

Extractum ergotæ liquidum. Dose, ♏x ad fʒj (.60 to 4. Gm.). This is apt to be uncertain.

Infusum ergotæ [Br.]. Dose, f℥j ad f℥ij (32. to 64. Gm.).

Tinctura ergotæ [Br.]. Dose, ♏x ad fʒj (.60 to 4. Gm.).

The powder is also used in doses of from 20 to 30 grs., and many experienced authorities recommend a fresh infusion made with the powder and swallowed.

Ergotine may be employed by subcutaneous injection, but this process has the drawback of causing a painful, black, and unsightly lump at the seat of puncture.

[Jaccoud (Moniteur de la Policlinique, No. 3, 1882) recommends for phthsical hæmoptysis, hypodermatic injection of ergotin.

℞.	Ergotin.	1	Gm.	
	Glycerinæ			
	Aquæ dest. āā	4		
	Aq. laurocerasi	2		M.

Of which 20–30 minims are to be injected from two to four times a day.

Prof. DaCosta considers ergotin as the most efficient and lasting means of treating the night sweats of phthisis. (Gr. ij three or four times a day.)].

℞.	Extracti ergotæ fluidi	fʒij;	or	8	Gm.	
	Decocti aloës compositi [Br.] ad	f℥viij;	"	256	"	M.

Fiat mistura, de quâ capiat unciam unam bis in die.

Useful in *amenorrhœa.*

℞.	Pulveris ergotæ	ʒj;	or	4	Gm.	
	Sacchari	ʒiv;	"	16	"	
	Aquæ bullientis	f℥iij;	"	96	"	M.

S. Capiat cochlearia duo magna quartâ quâque parte horæ ad effectum.

In a case of *labor.* [In America, the wine of ergot or the fresh fluid extract in doses of ʒj–iv are used in the second stage of labor.].

In a case of amenorrhœa from anæmia we may add a little ergot to any chalybeate mixture.

[ERIGERON—FLEABANE.

The leaves and tops of Erigeron heterophyllum and of Erigeron Philadelphicum, U. S.

ERIGERON CANADENSE—CANADA FLEABANE.

The leaves and tops of Erigeron Canadense, U. S.

OFFICINAL PREPARATIONS, U. S.

Extractum Erigerontis Canadensis Fluidum. Dose, fʒss–j (2. to 4. Gm.).

Oleum Erigerontis Canadensis. Dose, gtt. v (.30 Gm.).

Is diuretic, tonic, and astringent. It is chiefly used in *hemorrhage* in the form of the oil (dropped on sugar) gtt. v–xx, repeated every two or three hours; or a tincture may be employed. An infusion has also been used in *dropsy*, and in *genito-urinary affections.*]

[EUPATORIUM—THOROUGHWORT.

The tops and leaves of Eupatorium perfoliatum gathered after flowering has commenced, U. S.

OFFICINAL PREPARATION, U. S.

Infusum Eupatorii. Dose, f℥j–ij (32. to 64. Gm.).

Thoroughwort, or Boneset, is a bitter tonic and sudorific, and in large doses produces vomiting and purging. The hot infusion has been largely given for "*colds,*" *muscular rheumatism*, and *catarrh.* The infusion is emetic in doses of a pint. Dose of the powder as a tonic, in dyspepsia, gr. xx–xxx (1.30 to 2. Gm.).]

Extracta.

The officinal Extracts are—

Extractum Aconiti
" Arnicæ
" Belladonnæ
" " Alcoholicum
" " Radicis Fluidum
" Buchu Fluidum
" Calumbæ Fluidum
" Cannabis Americanæ
" " Indicæ
" Chimaphilæ Fluidum
" Cimicifugæ Fluidum
" Cinchonæ
" " Fluidum
" Colchici Aceticum
" " Radicis Fluidum
" " Seminis Fluidum
" Colocynthidis
" " Compositum
" Conii
" " Alcoholicum
" " Fructus Fluidum
" Cornûs Floridæ Fluidum
" Cubebæ Fluidum
" Digitalis
" " Fluidum
" Dulcamaræ
" " Fluidum
" Ergotæ Fluidum
" Erigerontis Canadensis [Fluidum
" Gelsemii Fluidum
" Gentianæ
" " Fluidum
" Geranii Fluidum
" Glycyrrhizæ
" " Fluidum
" Gossypii Radicis Fluidum
" Hæmatoxyli
" Hellebori
" Hydrastis Fluidum
" Hyoscyami
Extractum Hyoscyami Alcoholicum
" " Fluidum
" Ignatiæ
" Ipecacuanhæ Fluidum
" Jalapæ
" Juglandis
" Krameriæ
" " Fluidum
" Lupulinæ Fluidum
" Matico Fluidum
" Mezerei Fluidum
" Nucis Vomicæ
" Opii
" Pareiræ Fluidum
" Physostigmatis
" Podophylli
" Pruni Virginianæ Fluid.
" Quassiæ
" Rhei
" " Fluidum
" Rubi Fluidum
" Sabinæ Fluidum
" Sarsaparillæ Fluidum
" " Compositum Fld.
" Scillæ Fluidum
" Senegæ
" " Fluidum
" Sennæ Fluidum
" Serpentariæ Fluidum
" Spigeliæ Fluidum
" " et Sennæ Fluid.
" Stillingiæ Fluidum
" Stramonii Foliorum
" " Seminis
" Taraxaci
" " Fluidum
" Uvæ Ursi Fluidum
" Valerinæ
" " Fluidum
" Veratri Viridis Fluidum
" Zingiberis Fluidum.]

[FERMENTUM—YEAST.

A peculiar insoluble product of the fermentation of malt liquors, U. S.

Yeast is tonic, stimulating, slightly nourishing, and laxative. It contains alcohol, gluten, carbonic acid, and bitter

extractive from hops, and has been given, in doses of a pint, daily in low *fevers* attended with *irritable stomach.* It has also been used in *diabetes* and *boils.* Mixed with flaxseed meal or other farinaceous substances, it forms the yeast poultice, which is much used in *gangrenous ulcers.*]

FERRUM—IRON.

[**Ferri Hypophosphis.** Hypophosphite of iron. Dose, gr. v–x (.30 to .60 Gm.).

Ferri Sulphuretum. *Protosulphuret of iron prepared by melting together sublimed sulphur and iron in small pieces, U. S.* (Used only to make Hydrosulphuric acid.)

OFFICINAL PREPARATIONS, U. S.

Ferri Chloridum. Dose, gr. v–x (.30 to .65 Gm.).

Liquor Ferri Chloridi. Dose, ♏x (.65 Gm.).

Tinctura Ferri Chloridi. Dose, ♏x–xl (.65 to 2.60 Gm.).

Ferri Citras. Dose, gr. v–xx (.30 to 1.30 Gm.).

Liquor Ferri Citratis. Dose, ♏x–xl (.65 to 2.60 Gm.).

Ferri et Ammonii Citras. Dose, gr. v–x (.30 to .65 Gm.).

Ferri et Ammonii Sulphas. Dose, gr. iij–xij (.20 to .75 Gm.).

Ferri et Ammonii Tartras. Dose, gr. x–xxx (.65 to 2. Gm.).

Ferri et Potassii Tartras. Dose, gr. x–xxx (.65 to 2. Gm.).

Ferri et Quiniæ Citras. Dose, gr. v–xv (.30 to 1. Gm.).

Ferri et Strychniæ Citras. Dose, gr. iij–v (.20 to .30 Gm.).

Ferri Ferrocyanidum (Prussian blue). Dose, gr. v (.30 Gm.).

Ferri Lactas. Dose, gr. ij–x (.12 to .65 Gm.).

Ferri Oxalas. Dose, gr. ij–v (.12 to .30 Gm.).

Ferri Oxidum Hydratum. Dose, gr. v. (.30 Gm.). (As an antidote, gr. xx for each grain of arsenious acid swallowed.)

Ferri Phosphas. Dose, gr. v–x (.30 to .65 Gm.).

Ferri Pyrophosphas. Dose, gr. ij–vj (.12 to .40 Gm.).

Ferri Subcarbonas. Dose, gr. v–xx (.30 to 1.30 Gm.).

Emplastrum Ferri.

Trochisci Ferri Subcarbonatis. (Each gr. v. of subcarbonate of iron.)

Ferri Sulphas. Dose, gr. i–v (.06 to .30 Gm.).

Mistura Ferri Composita. Dose, f℥ss (16. Gm.)

Ferri Sulphas Exsiccata. Dose, gr. i–ij (.06 to .12 Gm.).

Ferrum Redactum. Dose, gr. ij–v (.12 to .30 Gm.).

Pilula Ferri Carbonatis (Vallet's Mass). Dose, gr. x–xx (.65 to 1.30 Gm.).

Pilulæ Ferri Compositæ. Dose, 2 to 6 pills.

Pilulæ Ferri Iodidi (each contains gr. j iodide of iron, and gr. ⅕ of reduced iron).

Syrupus Ferri Iodidi (gr. vij ⅓ to f℥j). Dose, ♏xx–xl (1.30 to 2.60 Gm.).

Liquor Ferri Nitratis. Dose, ♏x–xx (.65 to 1.30 Gm.).

Liquor Ferri Subsulphatis (Monsel's Solution). Dose, ♏ij–x (.12 to .65 Gm.).

Liquor Ferri Tersulphatis (used to prepare hydrated sesquioxide of iron).

Potassii Ferrocyanidum. Dose, gr. x–xv (.65 to 1. Gm.).

Iron is also used in preparing Potassii Bromidum, Ammonii Bromidum, and Ferri Bromidum (not officinal). Dose, gr. x–xx.]

Local Effects.

Physiological.

Certain of the stronger preparations of iron are very astringent, corrugating and hardening the tissues by coagulating their albumen, and also contracting the smaller bloodvessels.

Therapeutical.

In the form of the perchloride [chloride], iron is one of our most generally used astringents for the arrest of *hemorrhage*, as in *epistaxis*, leech-bites, in *flooding* (injected into the uterus, as advised by Dr. Barnes), or, in fact, in any variety passive hemorrhage.

It is also a valuable application to relaxed mucous membranes; thus, in many forms of sore throat, equal parts of tinct. ferri and glycerine will act well. It forms a good injection for *leucorrhœa*, and is extensively employed as an enema for the destruction of *thread-worms.* Velpeau recommended the application of a strong solution of sulphate of iron to the inflamed skin in *erysipelas*, and Ricord considers that tartrate of iron has an almost specific influence over the destructive ulcerative process of *syphilitic phagedæna.*

INTERNAL ACTIONS AND USES.

Physiological.	*Therapeutical.*
1. *Brain and Nervous System.*—Iron has a tonic influence over the nervous system, but occasionally, in plethoric persons, the stronger preparations will cause an uncomfortable sensation of fulness and throbbing in the head. [In combination with bromine, as bromide of iron, it is a valuable antispasmodic tonic, and is used by Dr. Da Costa in chorea.]	1. Iron is much used as a tonic in all conditions of *nervous exhaustion* and debility. Thus in *neuralgia*, which consists in a weakened state of the roots of certain sensory nerves, it is invaluable. In *chorea*, which generally coincides with debility, and in all cases depending in any way on want of nerve tone, it is a remedy of real value. As originally pointed out by Brown-Séquard and confirmed by Hughlings Jackson, iron does not agree with epileptics, increasing the ten-

2. *Circulation and Respiration.*—Iron acts as a tonic to the muscular structures of the heart, probably by supplying the stimulus of a larger supply of healthy blood. It is well known that iron not only augments the quantity of red coloring matter in the red corpuscles of the blood, but actually increases their number, this fact being proved by an ingenious instrument which enables us to calculate the proportion of red corpuscles which any given specimen of blood contains. [Hæmacytometer.]

Iron is held to increase the plasticity of the blood and to increase the red corpuscles by passing into and stimulating the lymphatic system and encouraging the transformation of the lymph globules. Recent researches have shown that no effect of this nature is produced on healthy blood, but that in anæmia the number of red corpuscles is very rapidly increased under the use of iron as the primary effect, without a proportionate

dency to fits. Gowers, who has carefully investigated this point, shows that it makes many cases worse, has no influence on others, but that a third class, on the border line between epilepsy and hysteria, may even derive benefit from the action of iron as a nervine tonic.

2. This increase in the red corpuscles of the blood, and, as a consequence, in the extent to which these important bodies carry out their function of bearing oxygen to the tissues, and finally converting it into ozone, explains further the marvellous tonic influence of iron. In *anæmia*, in protracted convalescence from acute disease, in general feebleness or debility, in *chlorosis* where it also acts by giving increased tone to the uterine functions, in *struma*, *rickets*, *secondary syphilis*, etc., iron forms the basis of every method of treatment.

rise in the hæmaglobin; however, when this also is secondarily augmented, the number of globules may even fall.

3. *On Secreting Organs.*—On the stomach, iron acts by bracing up the mucous membrane, and improving the appetite and digestive tone.

3. Here we have another explanation of its tonic properties.

Its astringency tends to cause constipation.

This action is utilized in the treatment of *diarrhœa*, where some of the more astringent preparations, as the pernitrate [nitrate, U. S.], are often of service.

Urine.—Iron increases the amount of urea given off by the urine, and occasionally irritates the bladder, causing frequency of micturition.

[But in ordinary tonic doses, the tincture of the chloride relieves *vesical irritability*, *strangury*, and *spasmodic stricture;* and is much used in *gleet* and *chronic Bright's disease.*]

4. *On Temperature.*—Iron raises the temperature partly by increasing the waste of the tissues, but partly also in virtue of its ozonizing properties.

SPECIFIC ACTION.

Iron has a very marked influence in checking *erysipelas*, which must be called specific. We here use the tincture of the perchloride [chloride], and give it in doses of from fʒss to fʒj every three or four hours. It is also of service in *diphtheria;* and Dr. Russell Reynolds has lately brought the evidence of over sixty cases to show that in *acute rheumatism*, given in large doses, it rapidly diminishes the pain and fever.

MODE OF ABSORPTION AND ELIMINATION.

The more soluble forms of iron are readily absorbed, and become combined as albuminates with the albumen of the blood, whilst the solid preparations must first undergo solution in the gastric juice. When they have played their part within the organism, they are thrown out principally by the feces, to which they impart a blackish color, but also in some measure by the pigment of the urine, the skin, hair, nails, urine, and by albuminous secretions, such as those of the bile, by all mucous and serous membranes, and by the epithelium, etc. etc.

MODES OF ADMINISTRATION. DRAWBACKS.

We have seen that various inconveniences may attend the use of iron, such as headache, irritability of bladder, constipation, nausea, etc., and it further has the disadvantage of blackening the tongue and teeth; but many of these evils may be avoided by using the lighter or less astringent preparations, such as the citrate of quinine and iron, wine, or saccharated carbonate; or by combining with some aperient, and by giving each dose after a meal. The dyspepsia and hepatic congestion occasionally following the use of the more astringent of the ferruginous tonics may best be obviated by adding one grain of the chloride of ammonium to each minim of the tincture of the perchloride.

But if no contraindication exists, there is no doubt that the astringent properties of the per-salts of iron stand us in good stead, and, in particular, no preparation is so useful on the whole as the old muriated tincture. In *secondary syphilis* the syrup of the iodide is of service, and children will always take steel wine or the saccharated carbonate well; whilst in cases of *chlorosis* with disordered menstrual function we shall find the mist. ferri composita to be very efficacious in improving the quality of the blood and gently stimulating the uterus to resume its neglected duties. The sulphate of iron has some influence in aiding the action of some purgative salts, as the sulphate of magnesia. The preparations of iron are so very numerous that no one but a student on the very brink of an examination would think of burdening his memory with them all; and we shall only refer, therefore, to those which form part of the daily stock-in-trade of the practical physician.

Vinum ferri [Br.] may be given in doses of from fʒj to fʒij; mistura ferri aromatica [Br.] f℥j ad f℥ij; mistura ferri composita f℥j ad f℥ij; ferri carbonas saccharata [Br.]

gr. v ad ʒj; syrupus ferri iodidi ♏x ad fʒj; ferri et ammoniæ citras gr. v ad x; ferri et quiniæ citras gr. v ad xx. Or in combination—

℞.	Tincturæ ferri chloridi	♏x;	or		65	Gm.	
	Spiritus chloroformi	♏xv;	"	1		"	
	Glycerinæ	fʒss;	"	2		"	
	Infusi calumbæ	q. s. ad f℥j	"	32		"	M.

S. Ter die sumend.

Chalybeate mixture.

℞. Misturæ ferri compositæ,
Decocti aloes compositi [Br.] āā fʒss or 16. Gm. M.
Fiat haustus ter die sumendus.

℞.	Magnesii sulphatis	℥ij;	or	64		Gm.	
	Ferri sulphatis	gr. xxiv;	"	1	60	"	
	Acidi sulphurici diluti	fʒij;	"	8		"	
	Infusi calumbæ	q. s. ad f℥viij;	"	256		"	

S. Capiat cochlearia duo magna omni mane.

Ferruginous aperient.

Iron, as a rule, is best taken after a meal, but we must warn our patient to avoid the neighborhood of tea, as the mixture of these two ingredients forms a species of ink, which is both nauseous and unsightly. As the more astringent preparations not only stain but injure the teeth, they may be conveniently sucked through a glass tube.

FICUS—FIG.

[*The dried fruit of Ficus Carica, U. S.*

Figs are slightly laxative, and enter into Confectio Sennæ, U. S.]

FILIX MAS—MALE FERN.

[*The rhizome covered with portions of the stipes of Aspidium Filix mas. When used only such portion of the rhizome as has retained its green color should be employed, and the stipes, being inert, should be removed, U. S.*

OFFICINAL PREPARATION, U. S.

Oleoresina Filicis. Dose, ♏v–xv (.30 to 1. Gm.).]

LOCAL ACTION.

Fern oil has no local action.

CONSTITUTIONAL ACTION.

Physiological.	*Therapeutical.*
The only marked action of the male fern is that of killing tape-worms. It occasionally produces a little nausea and diarrhœa, but in most cases it can be taken without discomfort. [Its virtue resides in an oleoresin, which is the officinal title in the U. S. P., but which is termed a fluid extract in the Ph. Br.; it is also sometimes spoken of simply as the oil of male fern.]	Fern-oil is used in medicine purely as an anthelmintic. Its destructive influence over all varieties of *tæniæ* has been effectually proved by a great mass of evidence, and one or two doses generally succeed in dislodging the entire worm. It is essential that the draught should be taken on an empty stomach, and, the intestines having been first cleared by a purgative, we direct our patient to fast for a few hours before bed-time, when he is advised to take a drachm of the liquid extract [oleoresin] suspended in milk. Or we may avail ourselves of the following formula, which acts well in concealing the nauseous flavor of the drug :—

℞.	Oleoresinæ filicis	fʒjss ;	or	6	Gm.
	Mucilaginis tragacanthæ	f℥ss ;	"	16	"
	Syrupi zingiberis	fʒij ;	"	8	"
	Aquæ q. s. ad	f℥iss ;	"	48	"

Misce, fiat haustus nocte vel primo mane sumendus.

[FŒNICULUM—FENNEL.

The fruit of Fœniculum dulce (De Candolle) U. S.

OFFICINAL PREPARATIONS, U. S.

Oleum Fœniculi. Dose ♏v–xv (.30 to 1. Gm.).
Aqua Fœniculi (oil ♏xv to Oj).

Also enters into Tinctura Rhei et Sennæ.

Much used in infusion as an aromatic carminative, for *flatulent colic* in infants.]

GALBANUM—GALBANUM.

[*The gum-resin of an undetermined plant, U. S.*

Dose, in substance, gr. x–xx (.65 to 1.30 Gm.).

OFFICINAL PREPARATIONS.

Emplastrum Galbani Compositum (containing also turpentine, Burgundy pitch, and lead plaster).

Pilulæ Galbani Compositæ (each, galbanum, gr. jss; myrrh, gr. jss; assafœtida, gr. ss).]

Also enters into Emplastrum Assafœtidæ.

Galbanum and ammoniacum are substances of no special theoretical value [but are ranked as expectorants, antispasmodics, and stimulants].

GALLA—NUTGALL.

[*A morbid excrescence upon Quercus infectoria, U. S.*

OFFICINAL PREPARATIONS, U. S.

Acidum Gallicum. Dose, gr. v–xx (.30 to 1.30 Gm.).
Glyceritum Acidi Gallici (ʒij to ℥j).
Tinctura Gallæ (℥ij to Oj). Dose, fʒj–fʒiij (4. to 12. Gm.).
Unguentum Gallæ (1 to 7 of lard).
Acidum Tannicum. Dose, gr. j–iv (.06 to .25 Gm.).
Unguentum Acidi Tannici (ʒss to ℥j.).
Glyceritum Acidi Tannici (ʒij to f℥j).
Suppositoria Acidi Tannici, each gr. v.
Trochisci Acidi Tannici, each gr. j.]

EXTERNAL ACTION.

Physiological.	*Therapeutical.*
Tannic acid has a powerful local astringent action, owing partly, no doubt, to its power of coagulating albumen, and "tanning," in some degree, any part to which it may be applied.	Tannic acid is a better topical astringent than gallic, and may be used to arrest *hemorrhage*, or *diarrhœa*, or as an injection for *gonorrhœa* and *leucorrhœa*. Combined with glycerine, in the form of the glycerite of tannin, it is very useful as an appli-

cation in various forms of *sore throat*, and to arrest the discharge in some chronic affections of the os uteri, in the chronic-weeping stage of *eczema*, in *ozæna*, and *chronic otorrhœa*. It may also soothe and restrain some of those irritable coughs which depend on chronic irritation about the pharynx. Galls are used, in the form of ointment, as an application to hæmorrhoids.

INTERNAL ACTION.

Tannic and gallic acids are both powerful astringents, but as tannic acid is rapidly converted in the system into gallic acid, it is preferable to use the latter. This conviction is proved by the fact that if we take the urine of a patient to whom tannic acid has been given, we find that it will not precipitate gelatine, but that it strikes a blackish tint with the persalts of iron.

Tannic acid is rarely used internally, but gallic acid is serviceable in various forms of hemorrhage, such as *hæmoptysis*, *hæmatemesis*, and *menorrhagia*; but in all of these it must yield the palm to ergot, and it is more especially in hemorrhage from the kidney that its curative action comes into play. It has also been used with success to check the excretion of albumen in chronic *renal disease*.

℞. Acidi gallici	ʒj;	or	4	Gm.	
Glycerinæ	f℥ss;	"	16	"	
Aquæ destillatæ	f℥vj;	"	192	"	M.

S. f℥j ter die.

For hemorrhages.

[As tannin in the usual form of solution or in substance is only slowly absorbed by the mucous membrane of the intestinal tract, Dr. Lewin[1] recommends its administration in solution in the form of an albuminate, which tastes better and is more easily absorbed, thus he uses:—

---

[1] Deutsch Med. Woch. No. 6, 1881.

℞. Sol. acidi tannici, 2. gr. in 100.
Misce, agitando, et adde—
Sol. album. ovi unius 10.0.
M.

The quantity of the albumen must, if necessary, be increased so as to correspond with the tannic acid.

For long-continued administration, the following is better :—

℞. Acid. tannici gr. ij–5.
Aquæ destillatæ 100.
Misce et adde—
Album. ovi unius.
Solutio sodii bicarb. q. s. ut ft. solutio limpida.
M. D. S.

Or, simply :—

℞. Acidi tannici 1. to 5.
Aquæ 150.
Solutio sodii bicarb. q. s. ad react. alkalin.
M. D. S.

Which should be kept well corked and not used until it has stood 24–48 hours.]

GAMBOGIA—GAMBOGE.

[*A gum resin derived from Garcinia Morella* (*Desrousseaux*) *var. pedicellata, U. S.*

Dose, in substance, gr. ij–iij (.12 to .20 Gm.).

It enters into Pilulæ Catharticæ Compositæ.]

LOCAL ACTION.

Gamboge has no local action, and differs from some other remedies of the same class in not exerting its purgative effects when applied to a raw surface or injected into the cellular tissue.

CONSTITUTIONAL ACTION.

Physiological.

On the Digestive and Secreting Organs.—Gamboge exerts a good deal of irritating effect, acting more

Therapeutical.

Gamboge is a drastic, hydragogue cathartic, formerly much used where free purgation of watery fluid seemed especially on the small intestine, and producing the discharge of large quantities of watery fluid. If given in sufficient quantity, inflammation and ulceration of the stomach and intestines may supervene, and death has followed the administration of a single drachm of the powder. It is also usually looked upon as a diuretic, but no trustworthy evidence has been given of its efficacy in this direction.

to be indicated, as in *cardiac dropsy;* but it is not only disagreeable and irritating, but uncertain, and has therefore been in great measure superseded by other remedies on which more dependence can be placed.

ABSORPTION, MODE OF ELIMINATION, ETC.

In order to insure its full absorption it seems necessary that gamboge must be previously dissolved in the bile, as we have seen that local application does not produce any purgative effect. It is, of course, thrown out in great measure by the intestines, but the coloring matter is excreted by the urine, to which it imparts a bright yellow tinge.

MODE OF ADMINISTRATION, DOSE, ETC.

The great objection to the use of gamboge is its uncertainty, as we can never precisely foresee the cases in which it will cause troublesome vomiting and purging. To try and obviate this, therefore, as well as to conceal its acrid taste, we generally combine it with other drugs; but on the whole I think I am justified in saying that gamboge has no therapeutic advantage which cannot be obtained more conveniently, and agreeably by the use of other purgative drugs.

We may most conveniently prescribe the compound pill which contains gamboge, aloes, cinnamon, hard soap, and syrup, and of which the dose is from 5 to 15 grains. [The compound cathartic pill U. S. P. contains calomel gr. j; jalap gr. j; compound extract of colocynth gr. j$\frac{1}{3}$; and gamboge gr. $\frac{1}{4}$. Dose, 1 to 4 pills.]

[GAULTHERIA—PARTRIDGE-BERRY.

The leaves of Gaultheria procumbens, U. S.

OFFICINAL PREPARATIONS, U. S.

Oleum Gaultheriæ. Used for flavoring.

Used in Syrupus Sarsaparillæ Compositus, and Trochisci Morphiæ et Ipecacuanhæ.

Winter-green, or tea-berry, is an aromatic astringent tonic, but is chiefly used as a flavoring addition to mixtures.]

GELSEMIUM—YELLOW JASMINE.

[*The root of Gelsemium sempervirens (Gray's Manual of Botany), U. S.*

OFFICINAL PREPARATION, U. S.

Extractum Gelsemii Fluidum. Dose, gtt. ♏ v–x (.30 to .65 Gm.).

An alkaloid gelsemia, discovered by Wormley, exists in the root; in combination with gelsiminic acid.

The tincture is generally kept in the shops, but is not officinal. Dose, gtt. x–xl (.60 to 2.60 Gm.) A saturated tincture is also made, of which smaller doses are to be given.]

CONSTITUTIONAL ACTION.

Physiological.

1. *Brain and Nervous System.*—Large doses of gelsemium cause vertigo and double vision. [Cerebral effects are explained by the accumulation of carbonic acid in the blood, secondary to respiratory paralysis. (Bartholow.)] A paralyzing influence is exerted on the spinal cord, the power of voluntary movement being finally quite abolished, numbness and staggering being preliminary symptoms. Re-

Therapeutical.

1. Gelsemium has been prescribed with success in *neuralgia* of the fifth nerve, *intercostal* and *ovarian neuralgia*, and *myalgia.*

Dr. Spencer Thompson has healed 40 cases of neuralgia successfully by gelsemium, pointing out, however, that its beneficial action is confined to affections of the trifacial nerve, and more especially to the branches supplying the upper and lower jaw, and particularly the latter, flex irritability is also suspended, the pupil dilates, and at a later stage the sensory columns of the cord are also paralyzed, producing complete anæsthesia (Bartholow). The first nerve affected is the 6th at its termination, causing paralysis of the external rectus, and later on the 3d is also attacked. A curious point about its action is, that when taken internally it contracts the pupil, whereas on topical application, rapid and full dilatation is produced, being complete in from 50 to 70 minutes. One advantage which it undoubtedly has over atropia, in addition to the swiftness of its effects, is, that the resulting diminution of accommodation for near objects is never so well marked, and passes away partially in 10 or 15, and absolutely in 30 hours.

Ringer tells us that large doses of the alkaloid [Gelsemia, of which gr. $\frac{1}{6}$ has caused death], at first paralyze, and then excite tetanus, which in a short time gives way to paralysis.

2. *Heart and Circulation.*—A slightly weakening effect on the heart is noted. [This is explained by Ott on the view that it diminishes the pulse-rate by lessening the irritability of the excito-motor ganglia of the heart, and the arterial pressure by diminish-

and that the dose must be full ♏xx of the tincture, repeated, if necessary, in $1\frac{1}{2}$ hour.

[In other disorders of the cutaneous nerves, as in *prurigo*, gelsemium has been successfully applied in dilute solution; and it has recently been recommended also for *rhus poisoning*.

℞. Acid. carbol. fʒss ; or 2 Gm.
Ext. gelsem. fld. fʒij; " 8
Glycerinæ, f℥ss ; or 16
Aquæ, f℥ij " 64
M. Sig. For local application.

(Dr. Edson, *Medical Record*, July 29, 1882.)]

This would indicate a certain advantage in ophthalmoscopic examinations over atropia, which causes much annoyance to hard-worked people by impairing vision for a week or ten days after use.

It has been recommended as a remedy for *tetanus*.

ing cardiac irritability and vaso-motor tonus, but Bartholow states that the action of the heart persists after stoppage of respiration.]

3. *Respiration and Temperature.*—The respirations become labored, shallow, and irregular, from diaphragmatic paralysis, death ensuing from asphyxia. The temperature falls, probably in consequence of the profuse perspiration which it induces.

4. *Digestive Organs.*

[Nausea and vomiting result from large doses, lasting several hours, this effect being produced by both its local and cerebral effect.]

3. Bartholow recommends gelsemium in various forms of convulsive or *spasmodic cough*, and in acute inflammations of the lungs and pleura he thinks it may do good by diminishing the activity of the respiratory functions.

4. The remedy should not be too frequently repeated, for fear of cumulative effect.

DOSE, ETC.

We may give the tincture every three hours, until drooping of the eyelid, dilatation of the pupil, and muscular languor are noted. [As it is certain that an idiosyncrasy exists in regard to this drug with certain patients, it is only safe to begin with two or three drop doses, as serious results have been reported by Dr. Wharton Sinkler and others from its use. In the treatment of poisoning by gelsemium hypodermic injections of morphia and atropia, and the use of ammonia, and diffusible stimulants are necessary, with hot applications and friction to the extremities.]

GENTIANA—GENTIAN.

[*The root of Gentiana lutea, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Gentianæ. Dose, gr. ij–iv (.12 to .25 Gm.).

Extractum Gentianæ Fluidum. Dose, ♏x–xxx (.65 to 2. Gm.).

Infusum Gentianæ Compositum. Dose, f℥j–ij (32. to 64. Gm.).

Tinctura Gentianæ Composita. Dose, fʒj–iv (4. to 16. Gm.).

Gentian is the type of the simple bitters, and is largely employed in cases where a tonic of this kind is indicated. As it contains no astringent element, it may readily be exhibited in combination with iron.

Gentian and chiretta may be grouped together, as their action is almost precisely similar. They are both light, agreeable tonics, with pleasant, aromatic, bitter flavor, and may be used freely in *dyspepsia* and *debility* with loss of appetite. Gentian has always, however, been much more generally employed than chiretta, and this may be partly due to the very agreeable compound preparations of the former drug.

[GERANIUM—CRANESBILL.

The rhizome of Geranium maculatum, U. S.

OFFICINAL PREPARATION, U. S.

Extractum Geranii Fluidum. Dose, fʒss–j (2. to 4. Gm.).

Crowfoot, or cranesbill, is an indigenous astringent tonic, containing tannic and gallic acids, and may be used with advantage in *bowel complaints*, and as a styptic. A decoction in milk is sometimes given to children.]

GLYCERINA—GLYCERINE.

[*A colorless, inodorous, syrupy liquid, of a sweet taste, and having the sp. grav.* 1.25, *U. S.*

Used in preparing officinal Extracta Fluida, and the Glycerita.]

This useful substance is almost exclusively used externally. It moistens and softens the skin, and when properly diluted both prevents and cures the painful and unsightly cracks known as "chaps" on the hands. It is a serviceable application, either alone or combined with other drugs, in various forms of skin disease.

It may soothe an irritable cough by moistening the dryness of the throat, and it is stated to be the most efficient means at our command for the prevention of bedsores. In addition to this, it forms an excellent vehicle for the solution of various drugs, as seen in the five glycerites of the Pharmacopœia, having this additional advantage, that its adhesive nature enables the active ingredient to remain longer than it otherwise would in contact with the affected surface. It is also a good solvent of the alkaloids, dissolving them freely, and, being decidedly antiseptic, it is now used for the preservation of vaccine lymph.

INTERNAL USE.

It was thought at one time that glycerine might prove an agreeable and efficient substitute for cod-liver oil; but this has not been confirmed, and glycerine is now seldom used internally. It has, however, some gentle laxative properties, and has lately been very confidently recommended as a remedy for bleeding piles. M. Catillon, working in Vulpian's laboratory, has found by experiment on animals that it increases the appetite, promotes nutrition, and lessens the urea. It would therefore seem worthy of further trial as an analeptic, although, if the observations of MM. Dujardin Beaumetz and Audige are correct, it is a drug of active physiological properties not to be rashly employed. These gentlemen found that, by subcutaneous injection, it causes tetanic rigidity, like strychnia, elevation of temperature, hæmaturia, and meningeal congestion. [It has been highly commended as a substitute for sugar in the diet of diabetic patients.]

[Glycerita.

The officinal GLYCERITES are—

Glyceritum Acidi Carbolici
" Acidi Gallici
" Acidi Tannici
Glyceritum Picis Liquidæ
" Sodii Boratis.

Their uniform strength is ʒij to the ounce, except glycerite of tar, which is ʒss to f℥j.]

GLYCYRRHIZA—LICORICE.

[*The root of Glycyrrhiza glabra, U. S.*

Enters into the manufacture of Decoctum Sarsaparillæ Compositum, Extractum Glycyrrhizæ, Extractum Sarsaparillæ Fluidum Compositum, Infusum Lini Compositum, Pilulæ Hydrargyri, and Syrupus Sarsaparillæ Compositus.

OFFICINAL PREPARATIONS, U. S.

Extractum Glycyrrhizæ Fluidum (for flavoring).

Extractum Glycyrrhizæ. Liquorice.

Mistura Glycyrrhizæ Composita. Brown mixture. Dose, f℥ss–j (16. to 32. Gm.).

Trochisci Glycyrrhizæ et Opii.]

This is only used as a flavoring ingredient [and enters into the Pilulæ Ferri Iodidi, Tinctura Aloes, Tinctura Rhei et Sennæ, and Trochisci Cubebæ.

Liquorice is an excellent demulcent, and in the form of decoction is used in *catarrhal affections* and *diarrhœa.* It is largely used as a flavoring ingredient, and is perhaps the best adjuvant to quinia, to disguise the bitter taste of that drug. The compound licorice mixture (Brown mixture) contains paregoric (f℥ij), antimonial wine (f℥j), and sweet spirits of nitre (f℥ss) in each pint (U. S.). It is very commonly used in *bronchitis*, acute and chronic, in combination with ammonium chloride, and stimulating expectorants like syrup of senega, or tincture of ipecacuanha.]

[GOSSYPII RADICIS CORTEX—BARK OF COTTON ROOT.

The bark of Gossypium herbaceum, and of other species of Gossypium, U. S.

OFFICINAL PREPARATION, U. S.

Extractum Gossypii Radicis Fluidum. Dose, fℨss–j (2. to 4. Gm.).

This is an efficient oxytocic and emmenagogue, largely employed in the South, in the form of decoction (f℥iv to Oj) as a parturifacient. A tincture is also used.]

GOSSYPIUM—COTTON.

[*A filamentous substance separated from the seed of Gossypium herbaceum, and of other species of Gossypium, U. S.*

OFFICINAL PREPARATIONS, U. S.

Pyroxylon. Gun Cotton.

Collodium. Pyroxylon dissolved in ether and alcohol.]

This useful substance is employed in various inflammatory conditions, with the view of excluding air and supplying warmth and slight support. Thus in *burns*, and more especially in those of a superficial nature, the immediate application of a thick layer of cotton-wool relieves the smarting pain and promotes recovery; and the same treatment may be recommended to a blister after the watery fluid has been removed from the bulla. In *acute rheumatism*, also, the patient may derive much relief from the careful and equable encircling of his inflamed joints with cotton-wool, secured in position by a few turns of flannel bandage.

It is also believed by some aurists to form the best material for the construction of an artificial membrana tympani.

[Cotton-root bark as a parturifacient has considerable reputation throughout the South; it is used in recent decoction or as a fluid extract. It does not appear to have abortifacient powers (Martin, *Am. Journ. Med. Sciences*, Prize Essay), although a valuable oxytocic in *tedious labor*.

For Collodion, see page 242.]

[GUAIACUM.—GUAIAC.

Guaiaci Lignum. *The heart-wood of Guaiacum officinale, U. S.*

Guaiaci Resina. *A peculiar resin obtained from Guaiacum officinale, by spontaneous exudation, by incision, by dry heat, or by decoction of the comminuted wood, U. S.*

OFFICINAL PREPARATIONS, U. S.

Tinctura Guaiaci. Dose, f℥j–ij (4. to 8. Gm.).

Tinctura Guaiaci Ammoniata. Dose, f℥j–ij (4. to 8. Gm.).

Also enters into Decoctum Sarsaparillæ Compositum, Syrupus Sarsaparillæ Compositus, and Pilulæ Antimonii Compositæ.

USES.

Guaiac is alterative, and is largely employed in *chronic rheumatism*, *rheumatoid arthritis*, and *syphilis*. The ammoniated tincture is the best preparation, and is usually given in milk.]

GUTTA-PERCHA—GUTTA-PERCHA.

[*The concrete juice of Isonandra gutta* (*Hooker*. *Loudon's Journal of Botany*, 1848), *U. S.*

OFFICINAL PREPARATION, U. S.

Liquor Gutta-Perchæ (in chloroform). Used in making charta sinapis.]

Gutta-percha is only adapted for external use, and is of service mechanically as a material for splints, being readily softened in hot water and moulded to the affected joint or limb. It furnishes a cheap and efficient rival to oiled silk, and its solution in chloroform forms a good and impervious covering in *smallpox*, *erysipelas*, and other affections where it is of importance to protect the skin from the action of the air.

HÆMATOXYLON—LOGWOOD.

[*The heart-wood of Hæmatoxylon Campechianum*, *U. S.*

OFFICINAL PREPARATIONS, U. S.

Decoctum Hæmatoxyli. Dose, f℥ij (64. Gm.).
Extractum Hæmatoxyli. Dose, gr. x (.65 Gm.).]

Physiological Action.	*Therapeutical Use.*
Logwood has astringent properties.	It is an agreeable and efficient remedy in *diarrhœa*, and is well taken by children. We must remember that it imparts its pink color to the feces, and to the urine should that secretion chance to be alkaline.

[It may be combined for diarrhœa as in the following formulæ:—]

℞.	Extracti hæmatoxyli	gr. x;	or		65 Gm.	
	Tincturæ catechu	fʒss;	"	2	"	
	Syrupi	fʒj;	"	4	"	
	Aquæ carui	q.s. ad f℥j;	"	16	"	M.
S.	Ter die sumendus.					

℞.	Pulveris cretæ aromatici (Br.)	ʒj;	or	4	Gm.	
	Tincturæ opii	fʒj;	"	4	"	
	Syrupi zingiberis	f℥j;	"	32	"	
	Decocti hæmatoxyli	q. s. ad f℥vj;	"	192	"	M.

Fiat mistura, cujas sumat unciam unam post singulas dejectiones liquidas.

[HEDEOMA—AMERICAN PENNYROYAL.

The leaves and tops of Hedeoma Pulegioides, U. S.

OFFICINAL PREPARATION.

Oleum Hedeomæ. Dose, gtt. ij–x (.12 to .65 Gm.).

Hedeoma is a gentle stimulant aromatic used in *flatulent colic*, *sick stomach*, and in *amenorrhœa*. In recent *suppression of the menses*, it is a popular domestic remedy, given in warm infusion.]

[HELLEBORUS—BLACK HELLEBORE.

Root of Helleborus niger, U. S.

Dose of the powdered root, gr. ij–iij, as an alterative; or gr. x–xx as a purge (.12 to 1.30 Gm.).

OFFICINAL PREPARATIONS, U. S.

Extractum Hellebori. Dose, as a purgative, gr. x (.65 Gm.).

Tinctura Hellebori. Dose, as a purgative, fʒij (8. Gm.).

Chiefly interesting on account of its popularity among the ancients as a hydragogue cathartic, but as it is harsh and uncertain in its action, it is rarely, if ever, used at present, except as an ingredient in emmenagogue pills.]

HORDEUM—BARLEY.

[*The decorticated seed of Hordeum distichon, U. S.*

OFFICINAL PREPARATION, U. S.

Decoctum Hordei (℥j to Oj) may be used *ad lib.*]

In the form of decoction, barley is used as a demulcent drink. [Malt extract is largely used as nourishment, given preferably in milk. Malt wine, and malt liquors are of special value in convalescence from the specific fevers, as they are tonic, moderately stimulating, and promote constructive metamorphosis.]

HUMULUS—HOPS.

[*The strobiles of Humulus lupulus, U. S.*

Lupulina. *The yellow powder separated from the strobiles of Humulus lupulus, U. S.*

OFFICINAL PREPARATIONS, U. S.

Infusum Humuli (℥ss to Oj). Dose, *ad lib.*

Tinctura Humuli (℥ijss to Oj). Dose, f℥ss–ij (16. to 64. Gm.).

Extractum Lupulinæ Fluidum (℥xvj to Oj). Dose, fʒss–ij (2. to 8. Gm.).

Oleoresina Lupulinæ. Dose, ♏x–fʒj (.65 to 4. Gm.).

Tinctura Lupulinæ (℥ij to Oj). Dose, f℥ss–ij (16. to 64. Gm.).]

Hops are tonic and probably narcotic, more especially in the form of the old-fashioned hop-pillow. Internally they are rarely prescribed. [They may be used as an anodyne cataplasm, either alone or with Indian meal. The preparations of lupulin are sometimes administered in *delirium tremens* as a sedative tonic.]

HYDRARGYRUM—MERCURY.

[*A silver-white metal, liquid at common temperatures, and having the sp. grav.* 13.5 *U. S.*

OFFICINAL PREPARATIONS, U. S.

I. In the Metallic State.

- Hydrargyrum.
- Emplastrum Ammoniaci cum Hydrargyro.
- Emplastrum Hydrargyri.
- Hydrargyrum cum Cretâ (mercury 37½ per cent.). Dose, gr. v–xxx. (.30 to 2. Gm.).
- Pilulæ Hydrargyri (mercury 33⅓ per cent.), 3 gr. pills.
- Unguentum Hydrargyri (mercury 50 per cent.).

II. Oxidized.

- Hydrargyri Oxidum Rubrum. Used externally.
  - Unguentum Hydrarg. Oxidi Rubri (ʒj–ʒvij).
- Hydrargyri Oxidum Flavum. Used externally.
  - Unguentum Hydrarg. Oxidi Flavi (ʒj–ʒvij).

III. Sulphuretted.

Hydrargyri Sulphuretum Rubrum. (For Fumigating.)

IV. As Protochloride (subchloride?).

Hydrargyri Chloridum Mite. Dose, gr. ss–x (.03 to .65 Gm.).

Pilulæ Antimonii Compositæ (calomel $16\frac{2}{3}$ per cent.).

Pilulæ Catharticæ Compositæ (each pill contains, calomel, ext. jalap, āā gr. j; ext. colocynth. comp. gr. j$\frac{1}{3}$; and gamboge, gr. $\frac{1}{4}$). Dose, 1 to 4.

V. As Bichloride (proto-chloride?, perchloride, Br.).

Hydrargyri Chloridum Corrosivum, gr. $\frac{1}{16}$–$\frac{1}{10}$ (.004 to .006 Gm.).

Hydrargyrum Ammoniatum. Used externally.

Unguentum Hydrarg. Ammoniati (gr. xl–℥j).

VI. With Iodine.

Hydrargyri Iodidum Rubrum (biniodide), gr. $\frac{1}{16}$ (.004 Gm.).

Unguentum Hydrargyri Iodidi Rubri (gr. xvj to ℥j).

Liquor Arsenici et Hydrargyri Iodidi (Donovan's Solution). Dose ♏ v–x (.30 to .65 Gm.).

Hydrargyri Iodidum Viride (protiodide). Dose, gr. $\frac{1}{4}$ (.015 Gm.).

VII. With Cyanogen.

Hydrargyri Cyanidum. Dose, gr. $\frac{1}{16}$–$\frac{1}{12}$ (.005 Gm.)

VIII. With Acids.

Liquor Hydrargyri Nitratis. As a caustic.

Unguentum Hydrargyri Nitratis (Citrine ointment).

Hydrargyri Sulphas Flava. Dose, gr. $\frac{1}{4}$–$\frac{1}{2}$ (Turpeth Mineral). As an emetic, gr. ij (.015 to .12 Gm.).

POISONING.

In the metallic state, mercury exercises but slight influence, but in a state of vapor it is capable of causing violent symptoms. All the salts of mercury are poisonous; but the most important is corrosive sublimate.

The symptoms caused by corrosive sublimate resemble those produced by arsenic, but, from the salt being more soluble, they are more immediate and violent; there is a more marked taste, the evacuations are more frequently bloody, and there is a whitened condition of the epithelium of the mouth. There are three varieties of poisoning with mercury. In the first, the leading symptoms are, violent irritation of the alimentary tube; namely, vomiting, purging, pain at the pit of the stomach, and irritation in the throat; metallic, stypic taste, corrosion of the mouth, tongue, and palate; constriction of the throat, and difficulty of swallowing. Blood evacuated both by vomiting and by stools, suppression of urine, countenance flushed, tumid, and bloated. In the second variety, salivation and sloughing of the mouth succeed to the irritation and inflammation. In the third, mercurial erethism comes on, and is not preceded by the symptoms of local irritation. The first variety arises from the more soluble salts of mercury, in large doses; the second, from the same preparations, but in smaller doses and more diluted; the third, by the more insoluble and refractory compounds.

Morbid Appearances.—These are similar to those attendant on irritative or corrosive poisoning. There are, frequently, shrivelling of the tongue, and enlargement of its papillæ and root. In some cases, red and black spots in the interior of the heart. Corrosion, ulceration, and disorganization of the mucous coat of the stomach and intestines. An inflamed condition of the urinary organs is also frequently observed.

TESTS.

Corrosive sublimate in a solid state is sublimed when heated in a test-tube; and the acrimonious fumes speedily condense into a crystalline, semi-transparent mass. Placed in a test-tube, and lime-water, potassa, or soda, added in solution, a yellow (*peroxide of mercury*) precipitate is thrown down.

In solution, ammonia throws down a white (*ammonio-chloride of mercury*) precipitate. Solution of proto-chloride of tin affords a precipitate (calomel), which, at first, is white, but acquires a leaden color on adding more of the test; when this precipitate (after being well agitated) is dried, minute globules of quicksilver may be detected. Transmission of sulphuretted hydrogen produces a (*sulphuret of mercury*) precipitate, which at first is leaden colored, then black. Solution of iodide of potassium affords an intensely brilliant scarlet (*biniodide of mercury*) precipitate, which dissolves in an excess of the test. Corrosive sublimate may be reduced to the metallic state through galvanic influence, applied as follows: A drop of the suspected fluid being laid on a piece of polished gold, and both it and the gold touched at the same instant by a point of iron (as a thick needle, or the end of a penknife), a small silvery coating of mercury soon becomes apparent on the gold. Being freely soluble in sulphuric ether, addition of this fluid is of much service when the poison is found mingled with organic or other matters.

The cyanide, when heated in a tube, evolves cyanogen gas, which will burn with a rose-red flame, with a blue halo.

Calomel is sublimed by heat. When treated with potassa, or lime-water, it assumes a black appearance, mercurous oxide being separated.

On cautious application of heat, the biniode sublimes in red-colored crystals, which soon change to yellow, and subsequently to a dusky hue. On exposure to a sufficient degree of heat, iodine fumes are disengaged. When mixed with potassa (equal weights) and heated in a test-tube, decomposition occurs; metallic mercury being sublimed, and iodide of potassium deposited in the tube.

When red precipitate is exposed to heat in a test tube, metallic mercury is sublimed, with the evolution of oxygen.

If the persulphate be treated in the same manner as the foregoing, sublimation of the mercury takes place, and sulphurous acid gas is evolved. (Griffith's Formulary.)

ANTIDOTES.

Acute poisoning produced by corrosive sublimate requires *albumen* (white of eggs, blood, or flour and water) and demulcents. Milk may be freely drunk, and vomiting encouraged. Gold-leaf and iron-filings form a chemical antidote, decomposing the chloride and depositing the mercury. It has been stated that the hydrated proto-sulphuret of iron, if taken immediately, completely destroys the poisonous properties of the corrosive sublimate.]

LOCAL ACTIONS.

Physiological.

One preparation, the acid nitrate, is a very powerful

Therapeutical.

The acid nitrate is used as an application in lupoid ulcaustic, in virtue of its free nitric acid.

Other preparations are occasionally used externally for skin diseases, syphilitic ulcerations, etc., and in virtue of the destructive power which they all (but more especially corrosive sublimate) exert over the lowest forms of animal and vegetable life. Mercury, being readily absorbed by the skin, is frequently introduced into the system by this channel.

[When using the acid nitrate of mercury as a caustic to chancroids or other sores, care should be taken to have it diluted with from ten to twelve parts of water. When applied stronger it sometimes causes very troublesome hemorrhage.] cerations, and in ulcerations about the *os* and *cervix uteri*.

Calomel in lime-water [ʒj to Oj] forms the familiar black-wash which is of great service in *venereal ulcerations*, either primary or secondary; and the same salt, in the form of powder, may be dusted on *condylomata* or *corneal ulcerations* with advantage. Corrosive sublimate, in the form of lotion, often checks troublesome *ulcerations of the throat;* and both this and the various forms of mercurial ointment are almost infallible remedies for *pediculi* or for *favus*, *tinea tonsurans*, and other skin diseases which are known to depend on the presence of minute vegetable growths. We must remember, however, that dangerous symptoms, and even death, have occasionally been caused by the absorption of the mineral when thus applied.

Many chronic skin diseases may be well treated by citrine ointment. *Goitre* frequently yields in India to the inunction of the biniodide, and Mr. Marshall has highly recommended the oleate of mercury as an application to various joint affections.

The external application of mercury, by the calomel vapor bath, or blue ointment, having for its object the pro-

	duction of constitutional effects, will be considered further on.

INTERNAL ACTIONS AND USES.

1. *Brain and Nervous System.*—Mercury, pushed up to the development of poisonous symptoms, produces a curious condition of nervous debility and tremors, which is occasionally met with in workmen who have been freely exposed to its fumes in silvering glass.	1. Mercury has been found of most signal service in some forms of advanced *syphilitic disease affecting the brain.*
2. *Circulation and Respiration.*—One form of mercury, the perchloride, or corrosive sublimate, acts as a cardiac poison, distinctly lowering the action of the heart, but the other preparations have no such influence. Mercury causes anæmia by destroying the red corpuscles of the blood. It has long been observed that they become spheroidal and of deeper hue, have less cohesion, and finally dissolve. The blood becomes more fluid, and the fibrine less coagulable. [But in minute doses, gr. $\frac{1}{100}$ to $\frac{1}{100}$, given thrice daily for a length of time, corrosive sublimate acts as a tonic and increases the number of the red-blood corpuscles, particularly in *syphilitic anæmia.*]	2. Mercury acts well in some forms of bronchitis by removing congestive œdema of the mucous membrane, and promoting the absorption of exudations and deposits.
3. *Secreting Organs—Stomach and Intestines.*—Mercurial preparations, and more especially calomel, act as	3. In that form of *vomiting* common in children, where the stomach rejects everything suddenly and violently,

purgatives, causing repeated grayish or greenish evacuations; the duodenum being the portion of the gut primarily acted upon. The action of mercury on the liver has provoked a good deal of controversy; and, whereas it was formerly held that the biliary secretion was directly stimulated, the experiments of Bennett and the Edinburgh Committee seem to show that, on the contrary, the flow of bile is actually checked or diminished by calomel. Two obvious fallacies underlie these experiments—the first being that the dogs, kept for considerable periods with biliary fistula, were so affected not only by the shock of the operation, but by the resulting inconvenience, general discomfort, and gradual starvation, that secretion must of necessity have been in great measure suspended; and, secondly, it is well known that a remedy which has no effect on a healthy organ may powerfully modify its condition when in a state of congestion or functional derangement.

$\frac{1}{3}$ gr. of hyd. cum cretâ or $\frac{1}{6}$ gr. of calomel every hour will often cure, as Ringer has shown. Small doses of the perchloride are also useful in dysenteric diarrhœa.

Calomel and blue pill are frequently used as adjuncts to other purgative drugs.

Clinical evidence has most distinctly proved, not only that the well-known symptoms of *biliousness* may be most effectively removed by the old-fashioned blue pill and black draught, but that an increase of bile may also be thus produced in the motions. This has been explained by the irritating influence of the mercury on the duodenum, and the consequent sweeping away of the secreted bile, which, under ordinary circumstances, is well known to undergo reabsorption from the intestines.

Mercury has been supposed also to act by stimulating the gall-bladder to contract.

But the careful experiments of Rutherford have proved that whilst calomel stimulates the intestinal glands, but not the liver, corrosive sublimate is a powerful hepatic, but a feeble intestinal stimulant.

There is no foundation for the belief that calomel acts by being converted into corrosive sublimate through the action of the gastric juice.

Kidneys.—Mercury, and more especially blue pill, has the power of promoting the action of diuretics.	Thus, in the form of Guy's pill, containing blue pill, squill, and digitalis, we obtain a most marked diuretic effect.
Saliva.—Mercury is well known to stimulate the action of the salivary glands, large quantities of their secretion being poured out when the drug is pushed far enough. The fluid, at first thick and containing much albumen, subsequently becomes thin and watery.	The old-fashioned notion is now happily exploded, that we must measure efficacy of our mercurial treatment by the amount of salivation.
Skin.—Inunction of ung. hydrargyri is apt to bring out a crop of irritable pimples, and one of the symptoms of mercurial poisoning is an eczematous eruption.	Ringer praises an ointment of calomel ʒj, to spermaceti ℥j, in pruritus and pityriasis of the scalp, and mercurial ointments generally are excellent stimulants in many chronic skin affections.
Mercury is supposed to stimulate absorption by rendering effused fibrine less cohesive, by promoting its disintegration, and by retarding cell-growth.	Mercury was accordingly invariably given, in former days, in all cases where any effusion of fibrine was supposed to have taken place, such as the second stage of *pneumonia.*

SPECIFIC ACTION.

Mercury may be said to act as a specific, or at least as a true vital antidote, in *syphilis*, and more especially in the primary and secondary stages of that insidious malady. When we are satisfied that we have to deal with an infecting sore, the sooner we begin our mercurial treatment the better; and it is well to push it in small doses for a considerable time, until the gums are slightly affected. For this purpose moderate doses of blue pill and opium are perhaps the most effectual; but we may also derive much benefit now and then from rubbing in ʒss to ʒj of blue ointment, night and morning. The whole train, also, of secondary eruptions of the skin, *sore throat; condylomata, iritis*, etc., must also be subjected to mercurial treatment, and the calomel vapor bath and the bichloride of mercury will here do us good service.

It is doubtful whether, by the most careful and scientific treatment of a primary sore, we can altogether prevent the development of secondary symptoms; but if we cannot do this we can at least postpone them, and render them less severe, and also lessen the probability of tertiary mischief. In order to get the most satisfactory results, we must continue a careful administration of mercury for many months, and if this be done, there seems no doubt that syphilis can be readily cured, or finally be eradicated from the system.

In the *congenital syphilis* of young children, the local application of a little blue ointment, either rubbed into the skin or smeared over a bit of flannel wound round the waist, is eminently satisfactory in its results.

Mercury was formerly believed to have a specific influence in checking the inflammations of serous membranes, and was consequently invariably used in *peritonitis, pericarditis*, and *pleurisy;* but faith in this conviction has been a good deal shaken of late, and the conventional calomel and opium does not so often appear in prescriptions as formerly.

On the continent much importance is attached to considerable doses of calomel in the early stages of *typhoid fever*, but statistics do not seem to prove any decided advantage as accruing from this mode of treatment.

DRAWBACKS, CAUTIONS, ETC.

It is important to be familiar with the signs which indicate when the mercurial treatment has been carried far enough. The gums generally give the first token in a delicate red line running along their margin, followed by pulpy thickening of the interdental portions, and finally retraction from the teeth. To this succeed [a metallic taste in the mouth,] an increased flow of saliva and a peculiar fetor of breath, and we generally find that the very slightest "touching" of the gums is sufficient to show that the physiological effect of the mineral has been attained.

[It should be remembered that salivation comes on rather slowly and sometimes appears a day or two after the administration of the mercurial has been suspended; showing that the system may be fully influenced by the remedy for at least twenty-four hours before its specific action on the mouth is apparent.]

Whilst a patient is undergoing a mercurial course, we must keep up his constitution well with good diet, iron, and perhaps a little stimulant; for experience shows that mercury far more speedily exerts its debilitating influence on weak persons or those who are enfeebled by fasting.

We must, therefore, beware of its use in consumptive or strumous persons, or in those suffering from Bright's disease or diabetes, and recollect that idiosyncrasy may here play an important part, and that some persons are much more readily salivated than others, without known cause.

Children, more especially those under the age of two years, are rarely if ever salivated, and only show the influence of the drug by peculiar greenish stools; but we must beware of using it in them too freely, as Mr. Hutchinson has traced a peculiar malformation of the teeth to the incautious use of gray and other so-called "teething" powders in early life. [But where salivation does occur in children it is apt to be uncontrollable, and to be followed by destructive ulceration, or gangrene of the mouth and lips, with ugly cicatrices.]

Mode of Elimination, etc.

Mercury is eliminated principally by the urine, but also in smaller degree by the saliva and the biliary and intestinal secretions.

Modes of Administration, Dose, etc.

In the treatment of syphilis, mercury may be given by inunction, in which from ʒss to ʒj of blue ointment is rubbed into the skin once or twice a day, varying the place of application so as to avoid that cutaneous irritation which may otherwise result. This method, although very effectual, is dirty, and rather liable to cause excessive salivation.

The oleate of mercury made by dissolving the oxide in oleic acid, and varying according to strength from a clear solution to a resin-like ointment, is a very clean way of using the drug externally, and, in addition to its value in syphilis, may be employed in articular inflammation, simple synovitis, threatening abscess, orchitis, sycosis, etc. (Marshall.)

Fumigation is also extensively employed, but it is only of real service in the cutaneous affections dependent on secondary syphilis, where the actual deposition of the vaporized calomel on the skin produces a beneficial local influence. Twenty grains of calomel are used at each sitting, and are diffused along with watery vapor by a spirit lamp, and brought in contact with the patient, as he sits covered with a blanket, on a perforated chair, over the fumigating apparatus.

Corrosive sublimate has been used by subcutaneous injection, but in this way it creates great local irritation, hard, black, painful lumps, often running into abscess, being produced at the site of puncture, and although much ingenuity has been expended on the search for a harmless solution, no success has yet attended these efforts. This, however, matters the less, because no reliable evidence has been offered to show any advantage in this plan over others, and it is undoubtedly much better to administer it by the mouth, when it is specially useful in chronic skin and throat affections. Some authorities prefer to give it alone, whereas others advise a combination with potassium iodide, thus:—

℞.	Hydrarg. chlor. corrosiv.	gr. ss;	or		03 Gm.	
	Potassii iodidi	ʒss	"	2	"	
	Decocti cinchonæ	f℥viij;	"	256	"	M.

S. f℥j ter die post cibum.

℞.	Hydrarg. chlor. corrosiv.	gr. ij;	or		12 Gm.	
	Acidi muriatici diluti	fʒij;	"	8	"	
	Mellis despumati	f℥j;	"	32	"	
	Aquæ destillatæ	q. s. ad f℥x;	"	320	"	M.

An excellent gargle for *syphilitic throat ulceration.*

Opinions vary considerably regarding the best form of mercury for internal administration in the treatment of syphilis. Mr. Hutchinson prefers hydrarg. cum cretâ in doses of from gr. iij to gr. v. two or three times a day. Ricord, on the other hand, advises gr. j–iij of the green iodide [but it is ordinarily given in much smaller doses to begin with], whilst others are content to employ the pil. hydrarg. in gr. j–iij doses in pill, keeping its purgative properties in check by a little opium.

℞.	Pil. hydrargyri	gr. ij;	or	12 Gm.	
	Pulveris opii	gr. ¼;	"	015 "	
	Confectionis rosæ	q. s.		"	M.

Ut fiat pilula quartâ quâque horâ sumenda.

[The following is a good formula for the protiodide:—

R. Hydrarg. iodidi viridis				
Extract. lactucarii	āā gr. xlv;	or	3 Gm.	
Extract. opii	gr. xv;	"	1 "	
Confectionis rosæ	ʒjss;	"	6 "	M.

In pil. no. lx. dividenda.
S. Dose, 1 to 3 pills a day.]

For purgative purposes the blue pill is generally prescribed in 5-grain doses, taken overnight, and aided by some saline aperient in the morning.

℞. Hydrarg. chlor. mitis	gr. xij;	or	80 Gm.	
Mannæ	gr. vj;	"	40 "	
Pulveris tragacanthæ comp. [Br.]	gr. vj;	"	40 "	M.

Divide in pilulas sex. Capiat duas pro re nata.

A good purgative formula.

As a diuretic the following is the useful old combination, sometimes known as the "Guy's," and sometimes as "Baillie's Pill:"—

℞. Pilulæ hydrargyri	gr. iij;	or	20 Gm.	
Pulveris scillæ	gr. jss;	"	10 "	
Pulveris digitalis	gr. ss;	"	03 "	M.

Fiat pilula bis terve die sumenda.

[Unguentum hydrargyri nitratis (citrine ointment) is much used as a stimulant and alterative application in chronic skin diseases and ophthalmia. It generally requires to be diluted with lard.

The decoction of Zittmann may be used with great advantage as a gentle diaphoretic and alterative in secondary syphilis, either alone or as an adjuvant to mercurials. It has been also used with advantage in scrofulous conditions of the system, in chronic rheumatism, in skin diseases, and obstinate ulcerative affections. The dose is one wine-glassful of each strength several times daily. The formula of the Prussian Pharmacopœia is as follows:—

Decoctum Zitmanni fortius.—Take of sarsaparilla root cut 100 parts; digest in water 2600 parts for 24 hours, and add, inclosed in a linen bag, powdered sugar and alum, each 6 parts, calomel 4 parts, and cinnabar 1 part; then heat in a covered vessel placed in a steam-bath for three hours, stirring frequently, and, near the end of the boiling, add anise and fennel, bruised, each 4 parts, senna, cut 12 parts, and licorice-root, cut 12 parts. Express, strain, set aside for some time and decant to obtain 2500 parts of clear liquid; 2500 grammes of this are to be divided into 8 parts.

Decoctum Zittmanni mitius.—Take the residue left from the preceding and 50 parts of sarsaparilla; heat with water 2600 parts, for three hours, in a covered vessel placed on a steam-bath, stirring frequently, and when near the end of the boiling, add lemon-peel, cinnamon, cassia, cardamom, and licorice-root, each, cut and bruised, 3 parts. Express and operate as before, to obtain 2500 parts.[1]

Mercury was detected by Wiggers in this decoction in very small proportion. It should not be prepared in metallic vessels lest the mercurial in solution should be decomposed.]

[HYDRASTIS—HYDRASTIS.

The root of Hydrastis Canadensis, U. S.

OFFICINAL PREPARATION, U. S.

Extractum Hydrastis Fluidum. Dose, f℥ij–iv (8. to 16. Gm.).

Hydrastis is an indigenous bitter tonic, containing the alkaloids berberina and hydrastia, and is said to have decided diuretic properties. A decoction has been used as an injection in *gonorrhœa.* Its exact therapeutic place among remedies does not appear to be well defined;] but it is said to be a stomachic tonic, useful in atonic dyspepsia, in chronic alcoholism, and in hemorrhoids and some hepatic disorders.

HYOSCYAMUS—HENBANE.

[**Hyoscyami Folia.** The leaves of Hyoscyamus niger, U. S.

Hyoscyami Semen. The seed of Hyoscyamus niger, U. S.

OFFICINAL PREPARATIONS, U. S.

Extractum Hyoscyami (from the juice). Dose, gr. i–iij (.06 to .20 Gm.).

Extractum Hyoscyami Alcoholicum (dried leaves). Dose, gr. $\frac{1}{6}$ to gr. j (.01 to .06 Gm.).

---

[1] [The National Dispensatory, Stillé and Maisch, Philadelphia, 1879, p. 497.]

Extractum Hyoscyami Fluidum (leaves). Dose, ♏v (.30 Gm.).

Tinctura Hyoscyami (dried leaves, ℥ij to Oj). Dose, fʒss–ij (2. to 8. Gm.).

Hyoscyamus is, like belladonna, a hypnotic and mydriatic, and owns the same antidotes.]

The remarks made with reference to stramonium are equally applicable to hyoscyamus, which also contains an alkaloid, hyoscyamia, probably identical with atropia. The main point of difference, then, from belladonna, is the superior narcotic powers of hyoscyamus, which have been especially prized and developed in lunacy practice. It is also a favorite remedy in painful and irritable *affections of the bladder*, where it seems to exert a marked soothing influence, and it is an excellent addition to cough mixtures.

℞. Extracti belladonnæ	gr. iij;	or		20	Gm.
Camphoræ	gr. xij;	"		80	"
Extracti hyoscyami	gr. xv;	"	1		"

Misce, fiant pilulæ sex, quarum sumat unam horâ decubitûs.

Narcotic for *nervous insomnia.*

℞. Tincturæ hyoscyami	♏xxx;	or	2		Gm.
Potassii carbonatis	gr. x;	"		65	"
Syrupi papaveris [Br.]	fʒij;	"	8		"
Aquæ camphoræ,	q. s. ad f℥iss;	"	48		"

Misce, fiat haustus horâ somni sumendus.

Narcotic.

℞. Vini ipecacuanhæ	fʒij;	"	8	Gm.
Ext. hyoscyami fluid,	fʒj;	"	4	"
Tincturæ scillæ	f℥ss;	"	16	"
Syrupi tolutani	f℥i;	"	32	"
Aquæ carui	q. s. ad f℥vj;	"	192	"

Misce. Capiat semuncium ter quaterve in die.

Cough Mixture.

Dr. Robert Lawson, late of the West Riding Asylum, has recently made a large variety of very interesting physiological and therapeutical observations on the actions and uses of HYOSCYAMIA, the alkaloid of hyoscyamus. He has found that it produces "a subdued form of mania, accompanied by almost complete paralysis of the voluntary muscles, and ending in quiet and refreshing sleep;" and he thinks that this might advantageously be substituted for opium in many forms of extreme excitement occurring among the insane. He has derived great benefit from the drug in "the treatment of recurrent, acute, and subacute *mania*, and the monomania of suspicion," and recommends the following formula:—

℞. Hyoscyamiæ	gr. j;	or		06	Gm.
Sp. ætheris [Br.][1]	♏viij;	"		50	"
Alcoholis	♏xxiv;	"	1	60	"
Aquæ fontis	q. s. ad f℥j	"	32		"

Misce, ut fiat haustus.

Ringer records a very interesting case of acute mania in which gr. j of hyoscyamia quieted the patient and produced sleep, the first dose causing deep flushing of the face and hands, with quickening of the pulse. He has found it useless in *delirum tremens*. Mr. Clifford Gill, of the York Asylum, has made many observations on the drug, finding that physiologically it causes loquacious rambling, hallucination of sight and hearing, drowsiness, hypermetropia, dryness of mouth, and deficient co-ordination of lower limbs. In violent mania it acts well, but as some persons are intolerant of its action, and death has been caused by syncope, we must proceed cautiously and begin with small doses (gr. $\frac{1}{8}$–$\frac{3}{8}$). The pure alkaloid is quite expensive, but an efficacious extract containing the amorphous salt is made by Merck; and Gill recommends a solution of gr. ij to the ℥j of ether and alcohol, freshly prepared; as it soon deteriorates, it must be kept from the light. It has also been used with some success in chorea.

[According to Gnauck (Centralblatt für die Med. Wissenschaften, No. 45, 1881) hyoscyamine is composed of hyoscine and tropaic acid. From experiments upon healthy individuals and others, he concluded that hyoscine is ten times stronger than hyoscyamine. Small doses of the iodide of hyoscine produce the same symptoms as hyoscyamine, in addition, however, there is a retardation of the pulse even with larger doses, varying with the dose and susceptibility of the individual.

Even $\frac{1}{600}$ of a grain invariably produces some of its effects in from two to twelve minutes. The fall in the pulse is the first symptom to appear and the last to disappear, the reduction ranging from eight to twenty beats.

---

[1] [A solution of ether, one part, to rectified spirit, two parts.]

A slight reduction of the pulse also occurs at the beginning of the action of atropine and hyoscyamine, and with small doses, but this is quickly followed by paralysis of the terminal filaments of the vagus. Hyoscine probably causes the fall by irritation of their filaments; tropaic acid, therefore, having the power to alter its action.]

[ICHTHYOCOLLA—ISINGLASS.

The swimming bladder of Acipenser Huso, and of other fishes, U. S.

Isinglass is only used in medicine as an article of diet for the sick, and as the basis of *court-plaster.*]

[IGNATIA—IGNATIA.

The seed of Strychnos Ignatia, U. S.

OFFICINAL PREPARATIONS, U. S.

Extractum Ignatiæ. Dose, gr. $\frac{1}{4}$–$\frac{1}{2}$ (.015 to .03 Gm.).

Is used for the same purpose as Nux Vomica, but the extract, containing more strychnia, is a somewhat stronger preparation.]

[Infusa.

The officinal INFUSIONS are—

Infusum Angusturæ
“ Anthemidis
“ Buchu
“ Calumbæ
“ Capsici
“ Caryophylli
“ Cascarillæ
“ Catechu Compositum
“ Cinchonæ Flavæ
“ Cinchonæ Rubræ
“ Digitalis
“ Eupatorii
“ Gentianæ Compositum
“ Humuli
“ Juniperi
“ Krameriæ
Infusum Lini Compositum
“ Pareiræ
“ Picis Liquidæ
“ Pruni Virginianæ
“ Quassiæ
“ Rhei
“ Rosæ Compositum
“ Salviæ
“ Sennæ
“ Serpentariæ
“ Spigeliæ
“ Tabaci
“ Taraxaci
“ Valerianæ
“ Zingiberis.]

IODINIUM—IODINE.

[*A bluish-gray non-metallic element obtained principally from the ashes of sea-weeds. It melts and rises in purple vapor when heated.*
In bluish-black crystalline scales having the metallic lustre. Its specific gravity is 4.9. *U. S.*

OFFICINAL PREPARATIONS, U. S.

Tinctura Iodinii (Iodine ℥j to Oj). Dose, gr. v–x (.30 to .65 Gm.).

Tinctura Iodinii Composita (Iodine ℥ss; potass. iod. ℥j; alcohol Oj). Dose, gtt. x–xx (.65 to 1.30 Gm.).

Liquor Iodinii Compositus (Iodine ʒvj; potass. iod. ℥jss; water Oj). Dose, gr. v–x (.30 to .65 Gm.).

Unguentum Iodinii (Iodine gr. xx, potass. iod. gr. iv to ℥j).

Unguentum Iodinii Compositum (Iodine gr. xv, pot. iod. gr. xxx, lard ℥j).

Liquor Arsenici et Hydrargyri Iodidi (Donovan's Solution). Dose, gtt. v–x (.30 to .65 Gm.).

Syrupus Ferri Iodidi (iodide of iron, 7⅓ gr. to fʒj). Dose, ♏ x–xxx (.65 to 2. Gm.).

Pilulæ Ferri Iodidi (ferri iodid. gr. j; ferri redact. gr. ⅙).

Also enters into Sulphuris Iodidum, Unguentum Sulphuris Iodidi, Arsenici Iodidum, Hydrargyri Iodidum Rubrum, Unguentum Hydrargyri Iodidi Rubri, Hydrargyri Iodidum Viride, Plumbi Iodidum, Potassii Iodidum, and Unguentum Potassii Iodidi.

ANTIDOTES.

Starch and demulcents. For the inconvenience arising in some persons very susceptible to iodine (as the severe catarrhal symptoms after taking potassium iodide), a warm bath and small doses of deodorized tincture of opium are useful.

INCOMPATIBLES.

With Iodine.—Alkalies and alkaloids (quinia and strychnia); extracts containing starch; water precipitates the iodine from tinctura iodinii. The compound tincture may be diluted with water without precipitation.

With Potassii Iodidum.—Acids, acetate of lead, and the metallic salts generally.

With Ferri Iodidum.—Lime-water, alkalies, and the vegetable astringents.]

LOCAL ACTIONS.

Physiological.

Iodine in substance is never used save for its antiseptic properties. Dissolved in spirit, however, it is an excellent counter-irritant, producing itching and smarting of the skin, with desquamation of cuticle, and even blistering if the application be too frequently repeated. It has been shown that this local action of iodine is attended by a very free extrusion of colorless blood corpuscles into the subcutaneous cellular tissue.

Experiment has proved that iodine is not absorbed into the system through the unbroken cuticle. [But fatal poisoning has resulted from absorption of a solution of iodine, which had been injected into an ovarian cyst.

Iodine and the soluble iodides are incompatible with the alkaloids as well as with most metallic salts in solution.]

Therapeutical.

It is therefore of some value for the correction of fetor in drains, etc.

The tincture or liniment of iodine is very extensively used as a counter-irritant application to *enlarged glands*, *chronic abscesses*, *swollen joints*, *chilblains*, and to various forms of skin disease, more especially the common varieties of *ringworm*, which speedily yield to this treatment. It is very useful when painted over the chest in *chronic pneumonia* and fibroid and tubercular *affections of the lungs;* and Mr. Jordan, of Birmingham, has recently drawn attention to the great success attained by him in the dispersion of *boils*, *carbuncles*, and *suppurating glands* by iodine freely applied to a neighboring vascular area.

It is also an excellent injection into various secreting cavities, curing *hydrocele* by obliterating the sac of the tunica vaginalis, acting well on the same principle in some rare cases of *ovarian dropsy* and *bronchocele*, and deodorizing and lessening discharges in *empyema* and *suppurating glands.* [In scrofula, Lugol's solution may be injected directly into the enlarged glands, with great benefit.]

[For the CONSTITUTIONAL EFFECTS, see Iodide of Potassium.

Hydriodic acid is a recent addition to our means of administering iodine for obtaining the constitutional effects, and it has been used with success in asthma, bronchitis, and hay fever. It is prepared on a small scale by the action of hydrogen sulphide on iodine mixed with water. It is, when pure, a colorless, irrespirable, and uninflammable gas, resembling somewhat in odor hydrochloric acid. Dissolved in water, it forms a clear, limpid solution, with an acid reaction, and rather a pungent, styptic taste; but quickly decomposes upon exposure to the air, the solution becoming colored by free iodine. It may be obtained, however, in a stable form as a syrup. Gardner's syrup of hydriodic acid is of a light-straw color, free from smell, with a sweet, styptic, though not disagreeable, taste. Each fluidounce contains about forty minims of dilute hydriodic acid, equivalent to six and a half grains of iodine. The dose usually ordered is from one to three drachms in water, several times a day.]

[IODOFORMUM—IODOFORM.

In yellow, scaly crystals having the odor of saffron. It is insoluble in water, but soluble in alcohol, ether, and the fixed and volatile oils. By a heat above 250° it is decomposed, giving off violet vapors. U. S.

It is prepared by decomposing an alcoholic solution of iodide of potassium with lime. As a local anæsthetic, it is applied in powder to *painful ulcers*, whether chronic, cancerous, or syphilitic, where it relieves pain and promotes cicatrization. Suppositories (gr. v–x) are used in *hæmorrhoids* and *uterine cancer*. In ethereal solution (20 per cent.), it has been highly recommended as an application in *chronic inflammation of the throat.*[1] Its abominable odor almost forbids its use outside of the hospital wards.]

[Phila. Med. Times, vol. iv. p. 4, 1873.]

IPECACUANHA—IPECACUANHA.

[*The root of Cephaëlis Ipecacuanha, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Ipecacuanhæ Fluidum. Dose, gtt. xxx (2. Gm.).

Pulvis Ipecacuanhæ Compositus. Dover's powder (ipecac. gr. j, opium gr. j, sulph. potass. grs. viij.). Dose, gr. x (.65 Gm.).

Trochisci Ipecacuanhæ (gr. $\frac{1}{4}$ in each).

Trochisci Morphiæ et Ipecacuanhæ (Morphia gr. $\frac{1}{40}$; ipecacuanha gr. $\frac{1}{12}$).

Syrupus Ipecacuanhæ (extract f℥ij to syrup xxx). Dose, fʒj–f℥ss (2. to 16. Gm.).

Vinum Ipecacuanhæ (f℥ij extract, to sherry wine f℥xxx). Dose, fʒj–iv (4. to 16. Gm.).]

LOCAL ACTIONS.

Physiological.

The prolonged application of ipecacuanha to the skin causes some irritation, followed by the appearance of vesicles, pustules, and even troublesome ulceration. In some persons the powdered root causes violent irritation of the respiratory passages, ranging from symptoms resembling hay-fever up to a spasmodic condition analogous to true asthma.

Therapeutical.

The use of the slowly acting and pustulating forms of counter-irritation has fallen out of fashion, as they are not only disfiguring, but give less relief than more sedative applications.

The only way in which we find ipecacuanha employed locally is in the form of spray, which Prof. Ringer has found very useful in *chronic bronchitis*, *winter cough*, *bronchial asthma*, with *emphysema* and *fibroid phthisis*. As the pure wine may cause nausea and irritation, he advises a dilution with from 1 to 2 parts of water, using the ordinary spray-producer, beginning with about twenty squeezes for the first sitting, once a day, but afterwards more frequently repeated, the mouth being well rinsed out after each application. Cases of winter cough were generally cured in twelve days.

Constitutional Actions.

I. *Brain and Nervous System.*—1. No effect seems to be produced on the brain.

2. Ipecacuanha has a markedly stimulating influence on that centre in the medulla oblongata which presides over the action of vomiting. Whether by subcutaneous injection, or by being taken into the stomach, it causes, within a moderate period, a decided but mild emetic effect; and as this may arise either from irritation of the mucous membrane of the stomach, or from a primary stimulation of the vomiting centre itself, ipecacuanha must be ranked among both the direct and the indirect emetics.

Emetia given by subcutaneous injection is much slower in its action, and requires to be given in larger doses than by the mouth, which proves that it must primarily act on the mucous membrane of the stomach.

It may be said generally to occupy a middle place between sulphate of zinc and

2. Ipecacuanha cannot be recommended in cases of poisoning, for not only does it act too slowly, but its nauseating and depressing influence may be injurious. It is of great service, however, in many of those affections of the throat or respiratory organs where we wish to empty the lungs or detach foreign bodies or false membranes from the larynx or trachea, as in *bronchitis*, *croup*, *diphtheria*, etc.

A most remarkable fact in the action of this drug is its power, when given in small doses, of checking *vomiting*. Thus, in the vomiting of nursing, pregnancy, or menstruation, in the irritability of stomach of children, and in other dyspeptic conditions in which nausea or vomiting are prominent symptoms, a drop of ipecacuanha wine taken every hour will often prove truly curative. At tartar emetic, being neither so prompt as the first, nor so nauseating as the second. It has been found by experiment to cause diminution of tactile sensibility and paralysis of the lips, not unlike glosso-pharyngeal paralysis, and depending probably on exhaustion of the medulla oblongata by the vomiting act.

II. *Circulation.*—Ipecacuanha has no direct influence on the heart or circulation, save the usual depression following nausea and vomiting.

III. *Respiration and Temperature.*—No effect is produced on the rapidity of the respiratory function, save the temporary acceleration usually accompanying the act of vomiting. There seems no doubt, however, that ipecacuanha causes an increased secretion from the mucous membrane of the bronchial tubes. After poisoning by ipecacuanha, the lungs have generally been found in a bloodless condition in the early stages, followed by intense congestion.

IV. *Digestive and Secreting Organs.*—1. — *Stomach and Intestines.*—As already noted, ipecacuanha causes some irritation of the terminal filaments of the pneumo-

present this must be looked upon as one of the enigmas of therapeutics.

III. Ipecacuanha is therefore a most useful expectorant, thinning and diluting the pulmonary mucus, and thus facilitating its expulsion. It is hence almost universally employed in *bronchitis*, *common catarrh*, *winter cough*, etc. It was formerly used, and with some alleged success, in *hæmoptysis*, 5-grain doses repeated at short intervals exerting a marked depressing effect, and thus checking the tendency to bleeding; but with the introduction of more effectual remedies, this mode of treatment has now fallen into disuse.

IV. 1. Ipecacuanha is indicated in some overloaded conditions of the stomach, caused by excessive indulgence either in food or drink; and the dull aspect, coated gastric nerve distributed to the stomach, and thus sets in motion the reflex machinery necessary to produce vomiting. On the mucous lining of the intestinal canal, also, its effects are undoubted, as indicated by its action in disease; but we are at present unable to give any satisfactory explanation of its often marvellous influence over dysentery in its various forms. tongue, foul breath, headache, and nausea, may be promptly relieved by a good emetic dose.

In *acute dysentery*, ipecacuanha is now looked upon as a never-failing specific. It must here be taken in full doses, from 15 to 20 grains being given at once and repeated in two hours; and although the first dose may be rejected by the stomach, toleration is speedily established, and no more vomiting is produced. Some authorities recommend a previous administration of laudanum to quiet the stomach. Docker goes further than this, and advises 60 to 90 grains in one dose, which often seems to cut short the disease. Let the patient after taking this remain quietly on his back for at least 10 or 12 hours before repeating the dose, and even then we must be guided by symptoms.

Under this treatment the pain and tenesmus rapidly subside, the motions regain natural color and consistence, and the patient makes a satisfactory recovery.

In cases of *dysenteric diarrhœa* so often met with in this country, and more especially in children, ipecacuanha in much smaller doses is also a very effectual remedy, the indications for its use being any appearance of

2. *Liver.* — Ipecacuanha is a powerful hepatic stimulant. It increases slightly the secretion of intestinal mucus, but has no other apparently stimulating influence on the intestines. The bile secreted under its influence has the normal composition.

3. *Skin.* — Ipecacuanha promotes slightly the cutaneous secretion, independently of the tendency to perspiration usually attending the action of emetics.

blood or mucus in the stools, with pain and straining. In the more ordinary forms of diarrhœa, however, it is quite useless.

2. It has therefore been given in the form of pill, and combined with other remedies, to relieve the ***sluggish digestion*** caused by a deficiency of bile.

3. Ipecacuanha combined with opium, in the form of "Dover's Powder," is a well-known and tolerably effectual diaphoretic, much used in ***chronic rheumatism*** and feverish attacks.

Mode of Elimination, etc.

It is probable that as much of the ipecacuanha as remains after the action of vomiting is eliminated from the system by the biliary and intestinal secretions.

Mode of Administration.

The action of ipecacuanha wine is so notoriously uncertain, that, when we wish to obtain the full emetic effect of the drug, it is best to have recourse to the freshly powdered root (15 to 30 grains, or 1. to 2. Gm.), remembering, however, that children will bear unusually large doses.

In the treatment of dysentery, also, we shall derive most advantage from the use of the powder; and in ordinary cases of dysenteric diarrhœa we may give from $\frac{1}{2}$ to 2 or 3 grains in combination with compound tragacanth powder.

Vinum ipecacuanhæ, in doses of from ♏ x to ʒj, is an almost invariable ingredient of cough mixtures.

[Emetia, the alkaloid of ipecacuanha, is not officinal, but is an efficient emetic in doses of gr. $\frac{1}{12}$ to $\frac{1}{6}$ (.005 to .01 Gm.).]

JALAPA—JALAP.

[*The tuber of Exogonium purga (Bentham, Botanical Register), Ipomœa Jalapa (Nuttall), U. S.*

Dose, in substance, gr. x–xxx (.60 to 2. Gm.).

OFFICINAL PREPARATIONS, U. S.

Extractum Jalapæ. Dose, gr. v–x (.30 to .65 Gm.).

Pulvis Jalapæ Compositus (jalap 1 part, cream of tartar 2 pts.). Dose, gr. xx–ʒj (1.30 to 4. Gm.).

Resina Jalapæ. Dose, gr. ij–iv (.12 to .25 Gm.).

Tinctura Jalapæ (powder ℥iij–Oj). Dose, ʒj–ij (4. to 8. Gm.).]

Physiological Action

The action of jalap resembles that of scammony, only differing in being less irritant and more effectual in promoting the flow of watery fluids from the bowels.

Rutherford points out that it is a "moderately powerful hepatic, and a powerful intestinal stimulant."

Therapeutical Action.

Jalap is undoubtedly one of our best hydragogue cathartics, and is much used in cerebral lesions, in *kidney disease*, where the excretion of effete products threatens to become suspended, and when dropsy is setting in; in such cases smart purgation by pulv. jalap. co. will often produce striking benefit.

In *cardiac disease*, also, when the right side of the heart is engorged by *emphysema* or *bronchitis*, free catharsis will unload the distended and laboring organ, and relieve the condition of intense dyspnœa, with the cold and livid surface and indications of approaching death. Jalap also acts well as an ordinary or habitual purgative, and is generally prescribed in the form of the compound powder, containing cream of tartar.

[JUGLANS—BUTTERNUT.

The inner bark of the root of Juglans cinerea, U. S.

OFFICINAL PREPARATION, U. S.

Extractum Juglandis. (Dose, as a laxative, gr. v–x; as a purgative, gr. xx–xxx (.30 to 2. Gm.).

Juglans is an indigenous cathartic resembling rhubarb in its property of evacuating without debilitating the bowels. Mild and efficient in its action, it is well adapted to *habitual constipation.* It may be given in decoction, or in the form of the officinal extract.]

JUNIPERUS—JUNIPER.

[*The fruit of Juniperus communis, U. S.*

OFFICINAL PREPARATIONS, U. S.

Infusum Juniperi (berries ℥j to Oj). Dose, f℥ij–iv (64. to 128. Gm.).

Oleum Juniperi. Dose, gtt. v–xv (.30 to 1. Gm.).

Spiritus Juniperi Compositus (oil fʒjss in Oviij). Dose, fʒij–iv (8. to 16. Gm.).

Spiritus Juniperi (oil f℥j in Oiij). Dose, fʒss–j (2. to 4. Gm.).]

Physiological Action.

Juniper stimulates the action of the kidneys, but, like many other remedies of its class, only increases the flow of urine where dropsy exists. It has been shown that in a healthy man the quantity of the urine is actually diminished, whilst the urea is increased.

[When an overdose is given, even strangury and total suppression may result. In small doses it is a gentle stimulant and stomachic.]

Therapeutical Action.

Juniper is a good diuretic, generally used in combination with other drugs, and acting either when swallowed, or inhaled in the form of vapor.

℞. Spiritus juniperi	f℥ss;	or	16	Gm.	
Potassii acetatis	ʒiss;	"	6	"	
Spiritus ætheris nitrosi	f℥j;	"	32	"	
Decocti scoparii [Br;]	f℥viij;	"	256	"	M.

S. Dose, f℥j ter die.

Diuretic mixture.

KINO—KINO.

[*The inspissated juice of Pterocarpus Marsupium (De Candolle) and of other plants, U. S.*

OFFICINAL PREPARATION.

Tinctura Kino (℥ss to Oj). Dose, fʒj (4. Gm.).]

Physiological Action.

Kino is astringent in virtue of the tannin which it contains.

Therapeutical Action.

It may therefore be used in *diarrhœa* and other cases where astringents are indicated, but it seems to have no special advantage over other remedies of the same class.

KRAMERIA—RHATANY.

[*The root of Krameria triandra (De Candolle), U. S.*

Dose in substance, gr. xx (1.30G m.).

OFFICINAL PREPARATIONS, U. S.

Extractum Krameriæ. Dose, gr. v–x (.30 to .65 Gm.).

Extractum Krameriæ Fluidum. Dose, gtt. xx (1.30 Gm.).

Infusum Krameriæ (℥j to Oj.). Dose, f℥j–ij (32. to 64. Gm.).

Syrupus Krameriæ. Dose, f℥ss 16. Gm.).

Tinctura Krameriæ (℥iij to Oj). Dose, f℥j–ij (32. to 64. Gm.).]

Physiological Action.

Krameria has powerful astringent properties, due, no doubt, to the tannin which it

Therapeutical Action.

Rhatany has been used with success in *dysentery* and *diarrhœa*, but is probably contains. [It is also gently tonic, and is much esteemed in Peru in treatment of bowel affections.]

inferior to many other remedies of the same class, and is therefore but seldom employed. [It is frequently added to chalk mixture, in the treatment of diarrhœa of relaxation.]

[LACTUCARIUM—LACTUCARIUM.

The concrete juice obtained from Lactuca sativa, by incision and spontaneous evaporation, U. S.

Dose, gr. xx (1.30 Gm.).

OFFICINAL PREPARATION, U. S.

Syrupus Lactucarii (℥j to Oj). Dose, f℥ss (16. Gm.).

Lactucarium, or Lettuce-opium, is a feeble narcotic, and is considered slightly laxative and diuretic. It has been used as a substitute for the other narcotics in *phthisis* and in *diseases of children.*]

[LAVANDULA—LAVENDER.

The flowers of Lavandula vera (De Candolle), U. S.

OFFICINAL PREPARATIONS, U. S.

Oleum Lavandulæ. Dose, gtt. iij–x (.20 to .60 Gm.).

Spiritus Lavandulæ. Dose, fʒss–j (2. to 4. Gm.). Enters into Mistura Ferri Composita.

Spiritus Lavandulæ Compositus. Dose, ʒj–iv (4. to 16. Gm.).

Lavender is a carminative, but is rarely used except in combination. The compound spirit is its most elegant preparation, and is a very agreeable stomachic and cordial. The oil is used in perfumery.]

[LEPTANDRA—LEPTANDRA.

The root of Leptandra Virginica (Nuttall), U. S.

Culver's root is emetic and cathartic, and is also considered cholagogue. Dose of the powdered root, gr. xx to ʒj

(1.30 to 4. Gm.). In small doses (gr. ij–v, or .12 to .30 Gm.), it is said to resemble rhubarb. The fluid extract (not officinal) is aperient in doses of ♏x to fʒj (.60 to 4. Gm.).]

LIMONES—LEMON.

[*The fruit of Citrus Limonum* (*De Candolle*), *U. S.*

Limonis Cortex. Lemon Peel.

Limonis Succus. Lemon Juice. Dose, f℥j–iv (32. to 128. Gm.).

Oleum Limonis. Oil of Lemon. Used for flavoring.

Acidum Citricum. Citric Acid.

OFFICINAL PREPARATIONS, U. S.

Spiritus Limonis. Used for flavoring purposes.

Mistura Potassii Citratis. Neutral mixture. Dose, f℥j–ij (32. to 64. Gm.).

Syrupus Limonis. As a vehicle.

Spiritus Ammoniæ Aromaticus. Dose, fʒss–j (2. to 4. Gm.).

Syrupus Acidi Citrici. As a vehicle.]

CONSTITUTIONAL ACTION.

Lemon-peel is in some measure tonic and anti-spasmodic, and is a useful flavoring ingredient, but lemon-juice has some important properties which are purely therapeutical, and cannot be explained by any action which it possesses over the healthy organism.

In the first place we must rank its antiscorbutic virtues, acting as it does both by preventing and by curing the disease, and by its universal use afloat nearly stamping out the ravages of what used to be an almost invariable attendant on long voyages at sea. The occurrence of *scurvy* to any extent on board ship is now looked upon as a clear indication that the regular administration of lime or lemon-juice has been neglected, and that the crew has been attacked by a painful and dangerous disease, the absolute preventability of which experience has amply confirmed. Various explanations have been given of the cause of scurvy, and there is no doubt that it is usually associated with an absence of fresh meat and vegetables from the diet scale. Dr. Garrod, however, goes further, and teaches that the essence of the disease lies in a deficiency of the potash salts; whilst Mr. Morgan, of Dublin, is no less convinced that the absence of phosphoric acid is the real cause—both agreeing in this, however, that the presence of this special ingredient in lemon-juice explains its superiority over citric acid, which is in no degree an antiscorbutic. It is unfortunate that lime-juice is bulky, and liable to become solid at low temperatures, and must be also administered in such considerable doses as to give some excuse for its occasional neglect on expeditions where every ounce of extra weight entails increased toil and danger. It is to be hoped that some more convenient and portable means of using this invaluable drug may yet be introduced.

Lemon-juice was formerly vaunted as a specific for *acute rheumatism*, and although this has not been confirmed by experience, there is no doubt that persons afflicted with *chronic rheumatic pains* may often derive benefit from taking a tablespoonful of this agreeable remedy two or three times a day with their meals. Lemon-juice has also been called a refrigerant, but its sole claim to this title rests upon the great facility with which we may construct refreshing effervescing draughts by its aid.

[Linimenta.

The officinal LINIMENTS are—

Linimentum Aconiti
" Ammoniæ
" Calcis
" Camphoræ
" Cantharidis
Linimentum Chloroformi
" Plumbi Subacetatis
" Saponis
" Terebinthinæ.]

LINUM—FLAXSEED.

[*The seed of Linum usitatissimum, U. S.*

Oleum Lini. Flaxseed oil (Linseed oil).
Lini Farina. Ground flaxseed (Linseed meal).

OFFICINAL PREPARATIONS, U. S.

Infusum Lini Compositum. As a demulcent. Dose, f℥j–iv (32. to 128. Gm.).

Ceratum Resinæ Compositum. Deshler's Salve.

Linimentum Calcis. Carron oil. (For burns.)]

LOCAL ACTION.

Physiological.

Linseed meal, in the form of poultice, is the most convenient and effectual way of applying continuous moist warmth to the surface of the body. Thus used, it relieves pain, relaxes spasm, and is generally soothing and agreeable to the feelings of the patient. By relaxing the superficial vessels, a poultice may be in some measure antiphlogistic, and may also relieve the congestion of internal organs by drawing blood to the cutaneous surface and promoting perspiration there.

Therapeutical.

A linseed poultice is a very soothing and effectual application in all acute affections of the lungs. Not only does it relieve pain, but it keeps up a warm equable temperature, and rests the affected organ by restricting in some degree the movements of the chest walls. It may also be used with advantage in *peritonitis*, in *colic*, in various inflammatory affections of the throat, and in *boils*, *abscesses*, etc., where, if it does not succeed in arresting the suppurative process, as occasionally happens, it facilitates and hastens the breaking down of inflammatory products into pus, and thus encourages the process of ripening. After the opening of the abscess, poultices cannot be recommended, as they are nauseous and dirty, and we would much rather advise the case to be treated on the antiseptic principles of Mr. Lister.

Linseed oil is an old-fashioned treatment for *burns*, and, combined with lime-water, was formerly extensively used under the name of Carron oil.

INTERNAL USE.

An infusion of linseed is rather soothing in character,

Under the name of linseed tea, this infusion is much probably owing to the mucilage which it contains.

used in domestic medicine as a soothing remedy for coughs.

MODE OF ADMINISTRATION.

When used as an application in pleurisy or pneumonia, a poultice must extend fairly round the chest; it should be about a quarter of an inch thick, and must be changed not seldomer than every two hours, as it soon tends to become dry, hard, and uncomfortable. It is best made by slowly adding the meal to boiling water, stirring vigorously meanwhile, and afterwards incorporating with it a certain amount of olive oil, which prevents its adhering to the surface. [A piece of oiled silk should be placed outside of the poultice to retain its warmth and moisture.] Occasionally its use seems to irritate the skin, and cause a crop of small boils and painful pustules, and it must, therefore, as a general rule, be avoided in moist cutaneous affections.

LITHIUM—LITHIUM.

[**Lithii Carbonas.** *Carbonate of Lithia.* Dose, gr. iij–vj (.20 to .40 Gm.).

Lithii Citras. *Citrate of Lithia.* Dose, gr. v–x (.30 to .65 Gm.).]

Physiological Effects.

Lithia forms a very soluble salt with uric acid, probably in the blood, and, therefore, prevents the deposition of chalky formations in the tissues.

It also causes an increase in the urinary secretion.

Therapeutical.

Lithia is, therefore, a valuable remedy for *gout*, and uric acid *gravel*, given either in the form of effervescing lithia water, lithii carbonas, or lithii citras.

It, therefore, acts as a diuretic perhaps more powerfully than any of the other alkaline salts.

LOBELIA—LOBELIA.

[*The leaves and tops of Lobelia inflata, U. S.*

Officinal Preparations, U. S.

Acetum Lobeliæ (f℥ij to Oj). Dose, from gtt. x to fʒj–ij (.65 to 8. Gm.).

Tinctura Lobeliæ (f℥ij to Oj). Dose, the same.

Antidotes.

The stomach should be washed out with warm solution of tannic acid, and symptoms of collapse treated as they arise, by stimulants, frictions, counter-irritants, sinapisms, and anodynes.]

Local Action.

Lobelia possesses no local action.

Internal Actions.

Physiological.

1. *Brain and Nervous System.*—In large doses, lobelia frequently causes headache and giddiness, and may eventually extinguish life by paralyzing the respiratory centre.

2. *Heart and Circulation.*—Lobelia depresses the action of the heart, and in this respect has a powerful affinity to tobacco.

3. *Respiration and Temperature.*—As already mentioned, lobelia in large doses is a respiratory depressant, but in ordinary medical practice it seems to relieve spasmodic conditions of the bronchial tubes.

It lowers the temperature in some measure, on account of its diaphoretic action.

Therapeutical.

3. Lobelia is only used in medicine in this country as a remedy for various respiratory affections, and more especially *spasmodic asthma.* Its action here is apt to be uncertain, and it may unexpectedly cause much nausea and discomfort; but Ringer tells us that we may employ it with great confidence by giving much larger doses than are usually prescribed.

Remember that its action in no way prevents the asthmatic attack, but merely cuts it short.

4. *Secreting and Digestive Organs.*—Lobelia has undoubted emetic properties, and frequently causes vomiting, accompanied by much nausea and general depression.

Skin.—Lobelia excites the action of the skin.

Kidneys.—Lobelia is said to promote the excretion of watery fluids by the kidneys.

4. Lobelia is never used as an emetic, being slow, uncertain, harsh, and exhausting.

Dose.

Ringer tells us that the dose laid down in our usual textbooks is much too small, and that we may freely administer a drachm of the ethereal tincture [same strength as tinct. lobelia, U. S.] every hour, or ten minims every ten minutes, with advantage, immediately before and during the asthmatical paroxysm. [The vinegar of lobelia is said to be the best preparation for internal use.]

The great drawback to its use is the occasional unpleasant symptoms following its administration, and which can be, unfortunately, neither foreseen nor prevented.

[Liquores.

The officinal Liquors are—

Liquor Ammonii Acetatis
“ Arsenici Chloridi
“ “ et Hydrarg. Iodidi
“ Barii Chloridi
“ Calcii Chloridi
“ Calcis
“ Ferri Chloridi
“ “ Citratis
“ “ Nitratis
“ “ Subsulphatis
“ “ Tersulphatis
“ Gutta-perchæ
“ Hydrargyri Nitratis

Liquor Iodinii Compositus
“ Magnesii Citratis
“ Morphiæ Sulphatis
“ Plumbi Subacetatis
“ “ “ Dilutus
“ Potassæ
“ Potassii Arsenitis
“ “ Citratis
“ “ Permanganatis
“ Sodæ
“ “ Chlorinatæ
“ Sodii Arseniatis
“ Zinci Chloridi.]

[LYCOPODIUM—LYCOPODIUM.

The sporules of Lycopodium clavatum, and other species of Lycopodium, U. S.

Lycopodium is an extremely light, very fine powder, of a delicate yellow color, inodorous, tasteless, and very inflammable, so that it flashes like gunpowder when thrown into the flame. It is used as a dusting powder for chafing, but should not be used when the skin is broken. It is also employed to coat pills in pharmacy.]

MAGNESIUM—MAGNESIUM.

[**Magnesii Carbonas.** Carbonate of Magnesia. Dose, ʒss–℥j (2. to 32. Gm.).

Magnesii Sulphas. Sulphate of Magnesia (Epsom salt.) Dose, ℥ss–j (16. to 32. Gm.).

OFFICINAL PREPARATIONS, U. S.

Magnesia. Dose, ʒj–iv (4. to 16. Gm.).

Trochisci Magnesiæ (each containing gr. iij).

Liquor Magnesii Citratis. Dose, f℥ij–iv (32. to 128. Gm.).]

INTERNAL USES.

Magnesia and its carbonate have a great capacity for saturating and neutralizing acid, and secondly, on becoming converted into bicarbonate by the carbonic acid of the intestines, they produce a mildly laxative effect.

Sulphate of magnesia acts much more powerfully, and causes profuse watery evacuations, and its action may be thus explained:—

In virtue of its low diffusive power, it does not readily find its way into the blood,

They are therefore antacid, and relieve pain or *heartburn*, and are also gentle purgatives, much used, more especially for children. Their tendency, however, to form concretions, when employed too long, limits their use in this respect.

Sulphate of magnesia is a very commonly used purgative in doses of from ʒj to ℥ss in simple constipation, in the early stages of small-pox and feverish conditions, in *chronic lead-poisoning*, but, remaining in the intestines, it attracts and firmly retains the watery fluid it finds there, and thus prevents its reabsorption. But, in addition to this, and to increasing the intestinal secretion, recent experiment has shown that it also actually withdraws fluid from the veins, as proved by the rapid way in which a small portion of intestine isolated from the rest of the tube becomes filled with watery fluid after the introduction of sulphate of magnesia. The experiments of Rutherford have shown that magnesium sulphate is a powerful stimulant to the intestinal glands, and that this action may at once be checked by paralyzing the sensibility of the gut by a little laudanum.

and, combined with iron, in many atonic conditions of the system.

Mode of Administration.

As sulphate of magnesia is not only very nauseous, but, when taken alone, may cause griping, straining, or uncomfortable abdominal distension, it is usually prescribed in combination with senna, cardamom, and liquorice, as in the mist. sennæ co. [Br.], or with a little acid and sulphate of iron, both of which seem to increase its purgative properties; and it is well to remember that free dilution also seems to enhance its effects. The following are good formulæ:—

R.	Magnesii sulphatis	℥ij;	or	64	Gm.	
	Syrupi zingiberis	f℥ss;	"	16	"	
	Infusi rosæ com.	q. s. ad f℥viij;	"	256	"	M.

S. ℥j tertiis horis.

℞.	Magnesii sulphatis	℥ij;	or	64	Gm.
	Ferri sulphatis	gr. xxiv;	"	1 60	"
	Acidi sulphurici diluti	fʒij;	"	8	"
	Infusi quassiæ	q. s. ad f℥viij;	"	256	"

Misce, fiat mistura, cujus capiat unciam unam omni mane.

℞	Magnesii sulphatis	℥ij;	or	64	Gm.
	Magnesii carbonatis	ʒij;	"	8	"
	Syrupi zingiberis	f℥j;	"	32	"
	Aquæ ment. piperitæ q.s. ad	f℥viij;	"	256	"

Misce, fiat mistura. Sumat unciam unam quartis horis ad effectum, phialâ priùs bene agitatâ.

[MANGANESIUM—MANGANESE.

Manganesii Oxidum Nigrum. Black oxide of Manganese (used in making oxygen, chlorine, and aqua chlorini) has been administered in doses of gr. iij–xx (.20 to 1.30 Gm.).

Manganesii Sulphas. Sulphate of Manganese. Dose, gr. v–xx (.30 to 1.30 Gm.).

INTERNAL EFFECTS AND USES.

Sulphate of manganese acts as a purgative in doses of ʒj–ij (4. to 8. Gm.), and in smaller doses has cholagogue properties. It has been used as a substitute for iron, as a *hæmatinic*. Dr. Hammond reports its successful use in *chorea*. In divided doses it has been given in *gastralgia*, *pyrosis*, and *indigestion*.]

MANNA—MANNA.

[*The concrete saccharine exudation, in flakes, of Fraxinus Ornus and of Fraxinus rotundifolia, U. S.*]

INTERNAL EFFECTS AND USES.

Has very slight purgative properties. [It is generally given in infusion combined with senna, but may be used alone boiled in milk for children, to whom its sweet taste makes it acceptable. Dose for a child, ʒj–iij (4. to 12. Gm.).]

[MARANTA—ARROWROOT.

The fecula of the rhizome of Maranta Arundinacea, U. S.

Enters into Trochisci Ipecacuanhæ.

USES.

Arrowroot is demulcent, and forms an agreeable article of diet for the sick and for infants.]

MARMOR—MARBLE.

Native, white, granular Carbonate of Calcium, U. S.

Used as a source for Carbonic Acid Gas, and in making Aqua Acidi Carbonici, and Liquor Calcii Chloridi. (See Calcium.)]

[MARRUBIUM—HOREHOUND.

The leaves and tops of Marrubium vulgare, U. S.

Used as a domestic remedy for coughs and colds and as a diaphoretic, in the form of decoction (℥j to Oj), syrup, and candy.]

MASTICHE—MASTIC.

[*The concrete resinous exudation from Pistacia Lentiscus, U. S.*

Enters into Pilulæ Aloes et Mastiches.]

This is only used as a filling for decayed teeth in dental surgery.

MATICO—MATICO.

[*The leaves of Artanthe elongata (Miquel), U. S.*

OFFICINAL PREPARATION, U. S.

Extractum Matico Fluidum. Dose, fʒss–j (2. to 4. Gm.).]

Matico is only used externally as a local application for the arrest of *hemorrhage;* and it is generally believed that it acts mechanically by the roughly-reticulated under surface of the leaf entangling the blood and forming clots. No success has attended its internal administration. [In the form of the fluid extract, Matico has been highly recommended in *hemorrhages* and diseases of mucous membranes, including *gonorrhœa* and *leucorrhœa.*]

[MATRICARIA—GERMAN CHAMOMILE.

The flowers of Matricaria Chamomilla, U. S.

Resembles chamomile in its properties, but is rarely used in America.]

[MEL—HONEY.

A saccharine liquid prepared by Apis mellifica, U. S.

OFFICINAL PREPARATION, U. S.

Mel Despumatum. Clarified Honey.

USES.

Enters into Confectio Aromatica, Confectio Opii, Confectio Rosæ, Oxymel (Br.), Mel Rosæ, Mel Sodii Boratis, Pilula Ferri Carbonatis, Pilulæ Quiniæ Sulphatis, Tinctura Cardamomi Composita, and Tinctura Opii Composita.

Its agreeable taste and demulcent qualities make honey a useful vehicle for distasteful powders, and render it an acceptable addition to gargles. Purified honey is a good excipient for pills, and forms the basis of the Mellita, which are used chiefly in washes for the throat and mouth.]

[**Mellita.**

The officinal HONEYS are: Mel Rosæ, Mel Sodii Boratis.]

[MENTHA PIPERITA—PEPPERMINT.

The leaves and tops of Mentha piperita, U. S.

MENTHA VIRIDIS—SPEARMINT.

The leaves and tops of Mentha viridis, U. S.

OFFICINAL PREPARATIONS, U. S.

Aqua Menthæ Piperitæ. Used as a vehicle.

Oleum Menthæ Piperitæ. Dose, gtt. iij–x (.20 to .65 Gm.).

Spiritus Menthæ Piperitæ. Dose, gtt. x–xx (.65 to 1.30 Gm.).

Trochisci Menthæ Piperitæ.

Aqua Menthæ Viridis. Used as vehicle.

Oleum Menthæ Viridis. Dose, gtt. iij–x (.20 to .65 Gm.).

Spiritus Menthæ Viridis. Dose, gtt. x–xx (.65 to 1.30 Gm.).

Peppermint and spearmint are favorite stimulant stomachics, and are much used as vehicles in mixtures. The troches of peppermint are a popular carminative. The oil of peppermint is used sometimes as a counter-irritant in *neuralgia*, following the Chinese practice.]

MEZEREUM—MEZEREON.

[*The bark of Daphne Mezereum and of Daphne Gnidium, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Mezerei Fluidum (used in Ung. Mezerei).

Unguentum Mezerei (a stimulant dressing).]

Decoctum Sarsaparillæ Compositum. Dose, f℥iij–iv (96. to 1.28 Gm.).

Extractum Sarsaparillæ Compositum Fluidum Dose, ʒss–j (2. to 4. Gm.).

This drug is never used save as a constituent of the decoctum sarsaparillæ co.

[Misturæ.

The officinal MIXTURES are—

Mistura Ammoniaci
" Amygdalæ
" Assafœtidæ
" Chloroformi
Mistura Cretæ
" Ferri Composita
" GlycyrrhizæComposita
" Potassii Citratis.]

[MONARDA—HORSE-MINT.

The leaves and tops of Monarda punctata, U. S.

OFFICINAL PREPARATION, U. S.

Oleum Monardæ. Dose, gtt. ij–iij (.12 to .20 Gm.).

EFFECTS AND USES.

The oil is used in domestic practice for *sick stomach* and *flatulent colic;* like the other mints, it is stimulant and carminative. Applied to the skin it is rubefacient, even vesicant, and has been employed as counter-irritant in *chronic rheumatism*, *infantile paralysis*, and in *low fevers.*]

[MOSCHUS—MUSK.

A peculiar, concrete substance obtained from Moschus Moschiferus, U. S.

INTERNAL EFFECTS.

Has undoubted antispasmodic powers, but has been almost entirely discarded on account of its high price and frequent adulteration. It may be given in doses of gr. v–xv (.30 to 1. Gm.), in *hysterical convulsions*, *hiccough*, in *low fevers* and *delirium tremens.* An efficient substitute for musk is Castoreum, see page 205.]

[Mucilagines.

The officinal MUCILAGES are—

Mucilago Acaciæ
" Sassafras Medullæ
Mucilago Tragacanthæ
" Ulmi.]

MYRISTICA—NUTMEG.

[*The kernel of the fruit of Myristica fragrans* (Houttuyn, *Nat. Hist.*) *U. S.*

OFFICINAL PREPARATIONS, U. S.

Spiritus Myristicæ. Dose, f ʒj (4. Gm.).

Oleum Myristicæ. Volatile Oil of Nutmegs. Dose, gtt. ij–iij (.12 to .20 Gm.).]

MACIS—MACE.

The aryllus of the fruit of Myristica fragrans (Houttuyn, *Nat. Hist.*), *U. S.*

Enters into Acetum Opii, Pulvis Aromaticus, Spiritus Ammoniæ Aromaticus, Spiritus Lavandulæ Compositus, Spiritus Rhei Aromaticus, Trochisci Cretæ, Trochisci Magnesiæ, and Trochisci Sodii Bicarbonatis.]

Nutmeg is rarely used in medicine save as a flavoring ingredient. [The dose of Nutmeg or Mace in substance is gr. xv (1. Gm.). With its aromatic qualities, nutmeg unites considerable narcotic power, and in doses of ʒij–iij (8. to 12. Gm.) has produced stupor and delirium.]

MYRRHA—MYRRH.

[*A gum-resinous exudation from Balsamodendron Myrrha* (Nees, *Beschreib. Officinel. Pflanzen*), *U. S.*

Dose, in substance, gr. x–xxx (.65 to 2. Gm.).

OFFICINAL PREPARATIONS, U. S.

Tinctura Myrrhæ (℥iss to Oj). Dose, fʒss–j (2. to 4. Gm.).

Tinctura Aloës et Myrrhæ. Dose, fʒj–ij (4. to 8. Gm.).

Pilulæ Aloës et Myrrhæ. Rufus's Pills.

Also enters into Mistura Ferri Composita, Pilulæ Ferri Compositæ, Pilulæ Galbani Compositæ, and Pilulæ Rhei Compositæ.]

LOCAL USES.

Physiological.	*Therapeutical.*
Myrrh is astringent, and checks excessive secretion from mucous surfaces.	It is a useful addition to gargles in relaxed or ulcerated conditions of the throat; it is a good application to spongy or unhealthy gums, as in mercurial salivation; and it often forms one of the active constituents of lotions for foul ulcers, where it gently stimulates the granulating surface, and corrects the fetor of discharges.

INTERNAL USES.

Like all the gum balsams and resinous substances, myrrh may possess in some degree the power of stimulating mucous surfaces. Tradition and the habit of prescribers have also invested it with some supposed influ-	Myrrh has occasionally been used as a stimulant in *chronic bronchitis*, but practically its application in medicine is now restricted to the administration of the various forms of pill in *amenorrhœa;* and here it is impossible to

ence over the uterus; but no trustworthy evidence has ever been brought forward on this point, and it is more than probable that its emmenagogue influence is quite secondary to the other drugs in combination with which it is prescribed in these cases.

separate its action from the aloes with which it is invariably combined.

℞. Aluminis	ʒij;	or	8	Gm.
Tincturæ myrrhæ	fʒij;	"	8	"
Infusi rosæ comp. q s. ad	f℥x;	"	320	"

Misce, fiat gargarisma.

NECTANDRA—BEBEERU BARK.

[*The bark of Nectranda Rodiei Schomburgh*), *U. S.*]

The bebeeru bark possesses some of the physiological properties of quinine. Thus it arrests the movements of the white blood-corpuscles, and checks the development of bacteria; but unfortunately it does not in any way fulfil the same therapeutical indications, save acting as a tonic in virtue of its bitterness.

[Like cinchona, it contains several alkaloids, the principal one having received the name of bebeeria, a sulphate of which is officinal in the Ph. Br., but not officinal in the United States. The antiperiodic dose of the sulphate of beberia is gr. xx–ʒj (1.30 to 4. Gm.). (It should not be confounded with *berberina*, the active principle of the simple bitters.)]

NUX VOMICA—NUX VOMICA.

[*The seed of Strychnos Nux Vomica, U. S.*

OFFICINAL PREPARATIONS, U. S.

Tinctura Nucis Vomicæ (℥iv–Oj). Dose, ♏x (.65 Gm.).

Extractum Nucis Vomicæ. Dose, gr. $\frac{1}{4}$ to $\frac{1}{2}$ (.015 to .03 Gm.).

Strychnia and **Strychniæ Sulphas.** Dose, gr. $\frac{1}{30}$ to $\frac{1}{12}$ (.002 to .005 Gm.).]

POISONOUS EFFECTS.

Strychnia kills by inducing hyper-excitability of the reflex functions of the spine, with violent tetanic spasms, leading to death by exhaustion or suffocation. The fatal event may take place in a few minutes if the dose be a large one, and the minimum quantity required to destroy life is about half a grain. Contrary to the habits of other poisonous drugs, strychnia acts most rapidly and efficiently when given by the rectum.

ANTIDOTES.

In a case of strychnia-poisoning, we may first administer tannin, which places the drug in an insoluble form, then, after evacuation of the stomach, it will be necessary to try the physiological antidotes. These are chloral, bromide of potassium, Calabar bean, and nicotia [or tobacco enemata], although the use of the last-mentioned remedy must be conducted with extreme caution. Finally, we may have recourse to artificial respiration.

[TESTS.

STRYCHNIA may be recognized by rubbing a small portion with a few drops of sulphuric acid containing one-hundredth of its weight of nitric acid. No change ensues; but the addition of a very small quantity of the peroxide of lead, or of bichromate of potassium, changes the solution to a blue color, then to a red, and in the course of a few hours to a yellow color. Commercial strychnia sometimes affords a red color, changing to a yellow, with nitric acid, owing to the presence of brucia.

BRUCIA is colored red by nitric acid, and this color changes to violet by the addition of protochloride of tin. With chlorine it gives a red color. Sulphuric acid first reddens brucia, and then turns it yellow and green.]

LOCAL ACTION.

No special local action has been noted.

CONSTITUTIONAL ACTION.

1. *Brain and Nervous System.*—No effect is produced

1. Nux vomica, and more especially strychnia, are ex-

on the brain, the cerebral functions remaining unimpaired almost up to the close of a case of strychnia-poisoning.

The spinal cord, however, is early attacked, and violent and distressing tetanic spasms prove the irritating influence of the drug, more especially on the reflex excitability of that organ.

In large doses, strychnia also paralyzes the efferent (motor) nerves, causing loss of power of voluntary movement.

The vasomotor and probably the respiratory centre are stimulated.

2. *Heart and Circulation.*—Strychnia causes rise of arterial pressure and contraction of the capillaries. Strychnia is an excellent remedy in some cases of

cellent nervine tonics, acting well in simple *debility*, *nervous exhaustion*, and *incontinence of urine*, and promoting the return of function after some forms of paralysis. When all inflammatory symptoms have subsided, strychnia may be prescribed in the hope of stimulating the spine to resume its duties, and restoring tone to muscles which long remained in a state of inactivity. Thus, in *paraplegia*, *hemiplegia*, *diphtheritic paralysis*, and *wrist-drop*, strychnia may well go hand in hand with galvanism when all evidence of irritation of the nervous structures has completely disappeared. Mr. Barwell has proposed subcutaneous injections of strychnia in infantile paralysis, using a large dose ($\frac{1}{16}$ to $\frac{1}{12}$ gr., .005 Gm.), and forcing the fluid freely into the muscular structures. [To begin with, a much smaller dose should be exhibited. One-half a grain, by the mouth, has killed an adult.]

In chorea it has been highly praised by Trousseau, Hammond, and others.

[2. When given in small doses it is an excellent heart tonic, probably from an effect secondary to that upon the vaso-motor nerves.]

paralytic and emphysematous asthma.

3. *Respiration and Temperature.*—The interference with breathing observed in strychnia-poisoning, and which usually terminates the life of the victim, is due to spasmodic fixation of the diaphragm and respiratory muscles.

4. *Digestive and Secreting Organs.* — Strychnia has a tonic influence over the digestive process, aiding oxidation, removing the products of waste, and delaying putrefaction.

4. Strychnia, and more especially nux vomica, are excellent tonics, improving the appetite in a marked degree; but, in addition to this, nux vomica is of great service in various *dyspeptic conditions*, relieving *heartburn*, *nausea*, and *flatulence*, and being also a reliable remedy in *sick headache* and the *vomiting of pregnancy.* It is an excellent addition to purgative pill masses, improving the tone of the muscular wall of the intestines and relieving constipation.

DOSE, MODE OF ADMINISTRATION, ETC.

The dose of strychnia may be put at from $\frac{1}{30}$ to $\frac{1}{12}$ gr. (.002 to .005 Gm.), and the liquor [Br.] is a convenient form, in doses of from 5 to 10 minims, added to any ordinary tonic mixture. We are usually advised to suspend its administration from time to time, as it is stated that uncomfortable twitchings and rigidity about the jaw may suddenly arise, giving evidence of the so-called "accumulation" of the drug.

By hypodermic injection we are usually taught that gr. $\frac{1}{120}$ is the proper dose, and it is therefore difficult to understand why no poisonous results followed Barwell's somewhat heroic medication, the reason probably being that the strychnia had been very imperfectly absorbed.

℞. Ferri sulph. exsic.	gr. xl;	or	2 60 Gm.	
Quiniæ sulph.	gr. xl;	"	2 60 "	
Strychniæ sulph.	gr. ss;	"	03 "	
Mannæ	q. s.			M.

Fiant pilulæ xx. Sumat unam ter die.

A useful tonic pill.

℞. Tinct. nucis vomicæ	fʒj;	or	4 Gm.	
Acidi nitro-muriatici diluti	fʒij;	"	8 "	
Spiritus chloroformi	fʒi;	"	4 "	
Infusi gentianæ	ad f℥vj;	"	192 "	M.

S. Dose, f℥j ter die sumend.

For *flatulent colic*, taken after meals.

℞. Ferri sulph.				
Ext. nucis vomicæ	āā gr. ss;	or	03 Gm.	
Ext. aloes Barb.	gr. iij;	"	20 "	M.

Fiat pil. ante cibum sumend.

A good "dinner pill."

[Olea.

The officinal Oils are—

Oleum Æthereum
" Amygdalæ Amaræ
" " Expressum
" Anisi
" Bergamii
" Cajuputi
" Camphoræ
" Cari
" Caryophylli
" Chenopodii
" Cinnamomi
" Copaibæ
" Cubebæ
" Erigerontis Canadensis
" Fœniculi
" Gaultheriæ
" Hedeomæ
" Juniperi
" Lavandulæ
" Limonis
" Lini
" Menthæ Piperitæ

Oleum Menthæ Viridis
" Monardæ
" Morrhuæ
" Myristicæ
" Olivæ
" Origani
" Pimentæ
" Ricini
" Rosæ
" Rosmarini
" Rutæ
" Sabinæ
" Sassafras
" Sesami
" Succini
" " Rectificatum
" Tabaci
" Terebinthinæ
" Theobromæ
" Thymi
" Tiglii
" Valerianæ.]

[Oleo-resinæ.

The officinal OLEO-RESINS are—

Oleo-resina Capsici
" Cubebæ
" Filicis
Oleo-resina Lupulinæ
" Piperis
" Zingiberis.]

[OLEUM ÆTHEREUM—ETHEREAL OIL, U. S.

Heavy oil of wine is a limpid, almost colorless, volatile fluid, of a pungent taste and vinous odor. Its solution in alcohol and ether is officinal as Spiritus Ætheris Compositus (see page 135, but it is never prescribed alone.]

OLEUM MORRHUA—COD-LIVER OIL.

[*The fixed oil obtained from the livers of Gadus Morrhua and of other species of Gadus, U. S.*

LOCAL ACTIONS.

Cod-liver oil is not used in virtue of any local action, as its nauseous smell effectually prevents it from forming the basis of ointments or liniments. Being very readily absorbed by the skin, however, it is occasionally introduced into the system by this channel when the patient is unable to take it by the mouth. [Inunctions with cod-liver oil are very useful in cachectic and scrofulous infants. It has also been used in ophthalmic practice, instilled into the eye, to remove slight opacity of the cornea.]

CONSTITUTIONAL ACTIONS.

Physiological.	*Therapeutical.*
I. *Brain and Nervous System.*—Cod-liver oil can only be said to act on the nervous system by improving its nutrition and supplying the fatty ingredients necessary for growth and repair.	1. It is therefore specially indicated in all nervous affections dependent on debility, such as *neuralgia*, some forms of *insanity*, *asthma*, *whooping-cough*, etc.
2. *Circulation.*—It has a tonic influence on the circu-	2. It is therefore much used in *simple debility*, in

lating organs, by improving the quality of the blood, increasing the number of red blood-corpuscles, both in health and in some pathological conditions, if it is well borne, and strengthening the heart-muscle.

3. *Respiration and Temperature.*—No special physiological influence is exerted on either of these functions. [In addition to its value as a hydro-carbon in simply nourishing the body, it is alterative by virtue of a small proportion of iodine, bromine, and phosphoric acid which it contains, associated with certain biliary principles, in a manner, perhaps, best adapted to secure their absorption and assimilation.]

4. *Digestive and Secreting Organs.*—It has been proved by experiment that animal are much more digestible than vegetable oils, probably on account of containing bile, and cod-liver oil is the most readily assimilated of all. After being emulsified by the pancreatic juice, it comes in contact with the bile, which distinctly increases its power of passing through moist animal membranes; and it is probable also that the biliary principles incorporated in its

convalescence from acute illness, in *anæmia*, tertiary syphilis, and other weakened conditions of the system.

3. Under this heading we may place, for convenience, the wonderfully restorative effects of cod-liver oil in *chronic lung disease*, but more especially in the various forms of *pulmonary phthisis*. It is beneficial in *asthma* and *chronic bronchitis*, but in *consumption* it really seems to be directly curative. It may be given with advantage in all stages, and under its use patients often rapidly gain flesh, and not only manage to hold the disease at bay, but even occasionally seem to escape from its clutches.

4. Cod-liver oil is almost invaluable in diseases depending on defective nutrition, as in all scrofulous conditions, such as *strumous ophthalmia*, *caries of bones*, *chronic joint-affections*, *glandular enlargements*, etc.; also in *rickets* and all the wasting disorders of childhood, in senile atrophy and decay, in *chronic rheumatism*, in all the ulcerative varieties of *skin disease*, and in advanced *constitutional syphilis*. Various attempts have been

own structure aid in enabling it to be easily absorbed by the lacteals. Its action on the system now is to improve the general constitutional tone, to evolve force and heat, and to aid in supplying those fatty elements which are so essentially requisite for the construction and repair of the tissues.

Cod-liver oil occasionally causes nausea, vomiting, and diarrhœa, and it has been shown to increase in some measure the biliary secretion.

made to explain the actions of the oil by means of certain special ingredients which it contains; but none of these have been successful, and we cannot at present do more than attribute its restorative influence to its ready digestibility and nutritive properties.

Mode of Elimination.

The greater part of the oil is absorbed into the system, but a little is given off by the feces; and it is well to watch the evacuations of children under its influence, to see whether any undigested oil escapes, this indicating an overdose.

Drawbacks. Mode of Administration.

Cod-liver oil occasionally produces so much nausea, eructation, and discomfort, as to compel us to suspend its administration; but most patients, and more especially children, speedily grow accustomed to its use. An eruption of acne sometimes is caused by the passage through the cutaneous glands of some of its acrid constituents. It is advisable to prescribe it in small doses directly, or, even better, an hour after meals, or at bed-time, to give it with some light tonic, and to suspend it from time to time, more especially in hot weather, or when bilious symptoms supervene. It may well be given in combination with a little alcohol, beaten up with the froth of porter, with mucilage, or lemon-juice, or with from ♏x to f℥j of æther puris, which, Dr. B. Foster tells us, and which I have amply confirmed by experience, aids digestion by stimulating the pancreatic secretion; but if the pale oil is used, very few persons will be found entirely rebellious to its use. Children, as a rule, take it well, but if they prove obstinate we may give it with orange wine, or in the following combination :—

℞. Olei morrhuæ	f℥ss;	or	16		Gm.	
Mucilaginis acaciæ	f℥ij;	"	64		"	
Sacchari	ʒij;	"	8		"	
Spiritus lavandulæ comp.	♏xx;	"	1	30	"	
Aquæ	f℥ss;	"	16		"	M.

f℥ss pro dosi.

[In private practice, Dr. Foster prefers to give the following mixture:—

℞. Potassii bicarb.	ʒjss–ij;	or	6		Gm.	
Acidi hydrocyan. dil.	♏xij–xvj;	"		75	"	
Spt. ætheris	ʒjss–iij;	"	6		"	
Aquæ q. s. ad	ʒviij;	"	256		"	M.

Dose, ℥j ter in die sumat.][1]

Black coffee forms a good medium for adults, or we may give the oil floating on beer, porter, or on the following mixture:—

℞. Acidi nitrici diluti	♏x;	or		65	Gm.	
Acidi hydrocyanici dilut.	♏j–ij;	"		06	"	
Tincturæ aurantii	fʒss;	"	2		"	
Aquæ	f℥ss:	"	16		"	M.

The dose should never exceed half an ounce.

[A pancreatic emulsion of cod-liver oil, and an emulsion with the lacto-phosphate of lime, or one with lime-water flavored with oil of bitter almonds, are largely used for children, although not officinal. Equal parts of extract of malt and cod-liver oil make a mixture that is readily taken by children.]

OLEUM OLIVÆ—OLIVE OIL.

[*The fixed oil obtained from Olea Europæa, U. S.*

Olive oil is nutritious and laxative, and is occasionally used for children as a substitute for castor oil. Dose, for an adult, f℥ij–iv (64. to 128. Gm.). It is a useful remedy for all kinds of irritant poisoning except PHOSPHORUS in substance. It is used largely in pharmacy.]

Olive oil is only used externally as an emollient application, and as the basis of various liniments.

---

[1] [Fothergill's Handbook of Treatment, Phila., 1878.]

OLEUM RICINI—CASTOR OIL.

[*The fixed oil obtained from the seeds of Ricinus communis, U. S.*

Enters into the Officinal Preparations, Collodium cum Cantharide and Collodium Flexile.

Dose, ʒj–℥j (4. to 32. Gm.).]

EXTERNAL USES.

Castor oil is a substance of such bland and unstimulating quality, that, were its smell less offensive, it might form a valuable external agent in certain cases. It is, however, occasionally used as a soothing application to the eye when extreme temporary irritation has been set up by abrasion of the corneal epithelium. Castor oil will purge when rubbed into the skin.

INTERNAL USES.

Physiological.

Castor oil gently stimulates the peristaltic movements of the intestinal canal, and slighly augments the fluid secretions of the gut. Some amount of astringent action generally follows the purgative action of the drug.

The seeds are very irritating, and cause gastro-intestinal irritation, three having proved fatal to an adult.

Therapeutical.

Castor oil is a mild and efficient cathartic, emptying the intestines without causing griping or discomfort. It is therefore useful in all cases where we simply wish to unload the bowels; but it is not a good habitual purgative from the subsequent constipation produced. This astringent action, however, gives it a special advantage in the treatment of *diarrhœa*, many cases of which depend on the presence of irritating matters in the intestinal canal; and under such circumstances, common sense naturally indicates the propriety of expelling the exciting cause. Dr. Geo. Johnson, however, goes further than this, and advocates the "eliminative" treatment of all diarrhœas, as well as of cholera.

Dose and Mode of Administration.

Although the best castor oil has but little actual flavor, it leaves a greasy, sickly sensation on the palate, which is exceedingly unpleasant. It is therefore important to give it in some form of combination, and we find floating the dose in a glass between two strata of whiskey or brandy [and cinnamon water] to be an effectual plan, or we may make use of the following formulæ :—

℞. Ol. ricini	f℥ss;	or	16		Gm.	
Mucilaginis acaciæ,					"	
Syrupi simplicis,	āā fʒij;	"	8		"	
Aquæ cinnamomi q. s. ad f℥ij;		"	64		"	M.

Fiat haustus statim sumendus.

℞. Ol. ricini	fʒiij;	or	12		Gm.	
Tinct. opii	♏x;	"		65	"	
Syrupi zingiberis	fʒj;	"	4		"	
Aquæ menth. pip. q. s. ad f℥ij;		"	64		"	M.

Fiat haustis statim sumendus.

Either makes a good prescription for the diarrhœa of irritation.

OLEUM SUCCINI—OIL OF AMBER.

The volatile liquid obtained by the destructive distillation of amber, U. S.

Officinal Preparation, U. S.

Oleum Succini Rectificatum. Rectified oil of amber. Dose, gtt. x–xx (.65 to 1.30 Gm.).

The oil of amber is stimulant and antispasmodic, and has been recommended in *bronchitis*, *hysteria*, and obstinate *hiccough*, and is also used externally, diluted with sweet oil, as a sedative and rubefacient for *whooping-cough*, or for *infantile convulsions*, as in the mixture recommended by Dr. Jos. Parrish :—

℞. Olei succini rectificati,					
Tincturæ opii,	āā f℥ss;	or	16	Gm.	
Olei olivæ,					
Spiritus vini Gallici,	āā f℥ij;	"	64	"	M.

To be rubbed along the spine.]

OLEUM THEOBROMÆ—CACAO BUTTER.

[*The concrete oil of the kernels of the fruit of Theobroma Cacao, U. S.*]

Oil of theobroma, being a firm, solid, and agreeable substance, is much used in the manufacture of suppositories, and enters into—

Suppositoria	Acidi Carbolici	(each	gr. j of carbolic acid.)
"	" Tannici	("	gr. v of tannic acid.)
"	Aloes	("	gr. v of purified aloes.)
"	Assafœtidæ	("	gr. v of assafœtida.)
"	Belladonnæ	("	gr. ½ extract of belladonna.)
"	Morphiæ	("	gr. ½ sulphate of morphia.)
"	Opii	("	gr. j extract of opium.)
"	Plumbi	("	gr. iij plumbi acetatis.)
"	Plumbi et Opii	("	gr. iij plumbi acetatis and gr. ½ extract. opii.)]

[OLEUM THYMI—OIL OF THYME.

The volatile oil obtained from Thymus vulgaris, U. S.

The oil of thyme is said to furnish the greater part of the commercial oil of origanum. It is aromatic and counter-irritant, the oil being used almost exclusively as a local application, and as an ingredient in *opodeldoc*, the linimentum saponis camphoratum of former editions of the Pharmacopœia.]

OLEUM TIGLII—CROTON OIL.

[*The fixed oil obtained from the seed of Croton Tiglium, U. S.*

Dose, gtt. i–iv (.06 to .25 Gm.).]

LOCAL ACTION.

Physiological.

The topical application of croton oil to the skin causes a good deal of irritation, followed by the appearance of a copious crop of papules, gradually developing into pustules. Dr. Tilbury Fox has

Therapeutical.

The local application of liniments containing croton oil was in former years a favorite mode of using counter-irritation in various chronic lung-affections, and it is still employed, more especially in described a symmetrical erythema of the face following this local employment; and it is said that the addition of an alkali favors the development of the counter-irritant properties of the drug.

public practice. But its drawbacks are, that it has a tendency to overact on tender or irritable skins, and the pustules are liable to leave cicatrices, so that it is difficult to believe it in any way superior to other and milder applications. Dr. Liveing recommends it highly in ringworm, giving the caution that, as it causes much irritation, it should not be applied to a surface larger than a florin at a time, and should never be used in children under ten years of age.

Internal Action.

When taken internally, croton oil produces much irritation of the intestines, running on, if the dose be sufficiently large, into a very fair imitation of the symptoms of cholera-poisoning, with vomiting, extreme purging, collapse, and acute inflammation of the intestines. It is a hepatic stimulant of very feeble power.

Croton oil, then, is a drastic purgative, valuable in certain cases on account of its rapid and powerful action. Thus in *apoplexy* and other *cerebral affections*, where it is of importance to obtain an immediate and thorough evacuation of the bowels, and in some conditions of obstinate constipation, we find considerable advantage from its cautious use.

Mode of Administration, etc.

Croton oil has an acrid and irritating flavor, and is best given in the form of pill or rubbed up with sugar. Garrod, however, tells us that it may well be prescribed in combination with castor oil, and, in case the patient is unable to swallow, it may be placed on the back of the tongue.

In an extreme case we might expect to obtain some purgative effect from rubbing it into the skin, as it appears to act by absorption through this channel.

℞. Olei crotonis	♏ij;	or	12 Gm.
Micæ panis	q. s.		M.

Fiat pilula, statim sumenda, et horis duabus repetenda si opus sit.

Or we may endeavor to keep its irritating properties in check by prescribing it in the following combination :—

℞. Ol. crotonis	♏iij	or	20 Gm.
Ext. colocynth. comp.	gr. xx;	"	1 30 "
Ext. belladonnæ	gr. iij;	"	20 "

Misce, divide in pil. vj, quarum sumat unam si opus sit.

For external use, a very good liniment is contained in the British Pharmacœpia.

OPIUM—OPIUM.

[*The concrete juice obtained from the unripe capsules of Papaver somniferum, by incision and spontaneous evaporation, U. S.*

Dose, gr. j (.06 Gm.).

OFFICINAL PREPARATION, U. S.

Acetum Opii (gr. j in ♏viss), Black drop. Dose, ♏v–vij (.30 to .45 Gm.).

Confectio Opii (gr. 1 in 36). Dose, ʒss (2 Gm.).

Extractum Opii (double strength of opium). Dose, gr. ss (.03 Gm.).

Emplastrum Opii (extract 1 in 16).

Suppositoria Opii (extract of opium gr. ss).

Suppositoria Plumbi et Opii (plumb. acet. gr. iij; extr. opium gr. ss).

Pilulæ Opii (each gr. j).

Pilula Saponis Composita (mass 20 per cent. opium).

Pulvis Ipecacuanhæ Compositus (Dover's Powder, gr. 1 in 10). Dose, gr. x (.65 Gm.).

Tinctura Opii (gr. j in ♏xiij). Dose, ♏xiij (.80 Gm.).

Tinctura Opii Acetata (gr. j in ♏x). Dose, ♏x .65 Gm.).

Tinctura Opii Camphorata (gr. j in f℥ss). Dose, fʒj to ℥j (4. to 32. Gm.).

Tinctura Opii Deodorata (gr. j in ♏xiij). Dose, ♏xiij (.80 Gm.).

Trochisci Glycyrrhizæ et Opii (gr. 1 to 20).

Trochisci Morphiæ et Ipecacuanhæ (each gr. $\frac{1}{40}$).

Liquor Morphiæ Sulphatis (gr. j in f℥j). Dose, fʒj (4. Gm.).

Suppositoria Morphiæ (each gr. ss).

Vinum Opii (gr. j in ♏viij). Dose, ♏viij (.50 Gm.).

$$\textbf{Morphia}\left\{\begin{array}{l}\textbf{Morphiæ Acetas}\\ \textbf{Morphiæ Murias}\\ \textbf{Morphiæ Sulphas}\end{array}\right\}\begin{array}{r}\text{Dose, gr. }\frac{1}{10}-\frac{1}{2}\\ (.006\text{ to }.03\text{ Gm.}).]\end{array}$$

Poisonous Action.

When opium has been given in a poisonous dose, the resulting sleep gradually grows deeper, the breathing becomes heavy and stertorous, the face is flushed, swollen, and dusky, the pupils contracted to mere points, distension of the right side of the heart still further prevents the return of blood from the engorged lungs, and paralysis of the respiratory centre finally causes death by suffocation. Much difficulty may occasionally attend the diagnosis of opium-poisoning from (1) alcoholic coma, where, however, the pupils are usually dilated; (2) from uræmic coma, where an examination of the urine, if practicable, might clear up our doubts; and (3) from apoplectic effusion in the pons Varolii, where the symptoms are usually so similar as to render an absolute diagnosis, under certain circumstances, impossible. After death we find well-marked congestion of the brain.

Treatment and Antidotes.

When summoned to a case of opium poisoning, the first indication must be to evacuate the stomach, and this is best effected by the stomach-pump, as the vomiting centre is too much paralyzed by narcosis to allow of its effective stimulation by emetics. We then try to counteract the tendency to sleep by cold affusion, irritation of the skin, strong coffee, galvanism, and walking the patient about, and, finally, we may cautiously use atropine as the physiological antidote. Although evidence comes to us from good observers of opium-poisoning checked by the antagonistic action of atropine, reports and opinions differ much on this head, and some authorities hold that atropine in certain proportions may even intensify the action of morphia.

Professor Bennet believes that atropia may be of service by contracting the vessels of the brain, and limiting the tendency to cerebral congestion.

As a last resource, we may have recourse to artificial respiration.

LOCAL ACTION.

Physiological.

It seems very doubtful whether opium can be absorbed through the unbroken cuticle. We are told that opium inspectors in India will remain for hours with their arms plunged up to the elbows in the inspissated extract, and that no narcotic effect is produced; but it is difficult, on the other hand, to believe that opium is entirely devoid of a property which belladonna possesses in so remarkable a degree. Sir Henry Thompson is also strongly of opinion that the bladder cannot absorb opium.

Therapeutical.

Fomentations with the decoction of poppy-heads, and with other preparations of opium, have long been recognized as efficient means for the relief of pain in various inflammatory conditions, as hemorrhoids, erysipelas, conjunctivitis, etc.; but as we cannot bring forward evidence of absorption of the drug, we must merely attribute this soothing influence to the thorough application of moist heat.

INTERNAL ACTIONS.

I. *On Nervous System.*—1. *Brain.*—In small quantity, or temporarily as the occasional preliminary action of a truly narcotic dose, opium is gently exciting to the brain, the intellectual faculties becoming generally stimulated, and the imagination more vivid. To this, however, rapidly succeeds a

I.—1. Opium, being the most certain narcotic known, is very largely prescribed in a great variety of cases. In *simple insomnia*, in worn-out conditions of the nervous system, in *acute fevers*, such as *typhus* and *typhoid*, where delirium and sleeplessness constitute truly dangerous complications, in *delirium* dulling or deadening effect, drowsiness supervenes, and deep sleep finally sets in, from which the patient wakes within a period of time, proportioned to the quantity of the drug administered. Headache, dryness of the mouth, and digestive disturbance are frequently experienced, and idiosyncrasy may in some rare cases interfere materially with sleep by bringing into special prominence the exciting or stimulating properties of opium. It is not quite clear in what precise way the narcotizing influence is in this instance produced; but analysis would lead us to believe that contraction of the cerebral vessels imitates natural sleep by inducing an anæmic condition of the gray matter of the brain. This has been proved by the experiment of Hammond, who found that the brain is anæmic in sleep caused by a small dose, but, as the sleep passes into coma, after a large dose, venous congestion sets in. The resulting contraction of the pupil is probably central in origin, as it cannot be produced by any local application of opium in any form.

2. The conductivity and irritability of the sensory nerves are much diminished, so that pain is felt with less intensity.

tremens, in the later stages of severe *smallpox*, in *meningitis*, *acute mania*, and in numerous other diseased conditions, which the reader can readily recall, this invaluable drug does most essential service by procuring sound and refreshing sleep.

2. And even when not given in truly narcotic doses, it may also lull the sufferer into slumber by benumbing the sensory nerves and removing pain. As a sedative,

3. The reflex function of the spinal cord is at first slightly increased, but subsequently becomes lessened in degree, and the respiratory centre is weakened and finally paralyzed. In cold-blooded animals, as the frog, in which the cerebral are subordinated to the spinal functions, opium causes most violent tetanic convulsions. [This also happens occasionally in children.]

4. The sympathetic system of nerves is also primarily

anodyne, or analgesic, it is indispensable in many painful conditions, such as *neuralgia*, *sciatica*, *cancer*, *biliary* or *renal calculi*, *labor after-pains*, *colic*, etc., and, as we shall presently see, the subcutaneous injection of morphia is the most effectual, as it certainly is the most rapid and convenient mode of obtaining this action of the drug.

Opium is also an excellent antispasmodic, and acts well by relieving irregular muscular contraction, as in the intestine causing *colic*, in the uterus tending to abortion, or exhausting *after-pains*, in *spasmodic urethral stricture*; and its remarkable influence over some forms of obstinate ulceration must also be due to some nervous influence.

3. Opium, having the property of arresting the muscular action of various organs, is our sheet-anchor in those terrible cases where *rupture of the intestine*, *bladder*, or *uterus*, has occurred, and where the only possible chance of recovery consists in most perfect rest of the viscera, encouraging the healing process, and preventing the escape of irritating secretions into the peritoneal cavity.

excited and secondarily depressed.

II. *Vascular System.* — The action of the heart is at first slightly quickened, but afterwards its beats become slower, the pulse fuller and firmer, and the arterial tension raised, this effect being considered due to an influence on the cardiac inhibitory nerves. It is noted, however, that shortly before death, in cases of opium-poisoning, the pulse becomes feeble, rapid, and irregular. The stimulating action on the sympathetic nerves causes some contraction of the smaller vessels to accompany the use of moderate doses of opium.

II. The subcutaneous injection of morphia has been advised by Dr. Clifford Allbutt in *angina pectoris*, *palpitation*, and various painful cardiac conditions. Its contracting influence on the small vessels explains the antiphlogistic effect of opium in cases of *peritonitis* and other inflammatory conditions, as well as its power of checking *coryza* in its early stage. It also acts well as an astringent in some forms of *hemorrhage*, and more especially that from the lungs.

III. *Respiration and Temperature.* — The breathing tends to become slow from the paralyzing influence of opium on the respiratory centre, and at the same time the secretion from the bronchial tubes is lessened.

The temperature at first rises a little, but finally falls when sweating is established.

III. Opium is the most soothing remedy for coughs of all kinds, but more especially that of *phthisis*. It is a valuable aid in *spasmodic asthma* and the early stages of *acute pneumonia*, but in the later stages we must beware of its power of checking secretion, and in *bronchitis* it may do harm by slowing the respiratory movements, causing sleep to interfere with the due emptying of the bronchial tubes, and thus leading on to imperfect aeration of the blood and final suffocation.

IV. *Digestive and Secretory Organs.*—1. Nausea occasionally follows the use of

IV.—1. Opium is an excellent astringent in *diarrhœa*, *dysentery*, and British

opium, and constipation invariably results from diminution of the intestinal secretions, no less than arrest of the peristaltic movements of the canal.	[or sporadic] *cholera*, often succeeding where other remedies fail, and for the relief of pain and tenesmus, nothing is better than the enema of the [Br.] Pharmacopœia. In the *diarrhœa* of ulcerative processes, such as typhoid and phthisis, and the later stages of *dysentery*, it is truly invaluable.
2. The salivary secretion is also diminished, causing dryness of the tongue.	
3. The urine is lessened in quantity, but opinions differ as to the effect produced on its solid ingredients.	3. Opium is of great service in some cases of *diabetes*, checking the craving appetite, and lessening the secretion of sugar. We must beware of its use, however, in advanced cases of renal disease, where it acts injuriously by checking secretion and encouraging the retention of urea in the blood.
4. The biliary secretion is checked.	
5. The secretion of the skin is increased, perspiration generally resulting, and we may say generally that opium checks all secretions but that of the skin. Elimination takes place by the breath, sweat, urine, etc.	5. Opium in some forms, but more especially Dover's powder, acts as an efficient diaphoretic.

Cautions and Modes of Administration.

In giving opium we must remember that human beings, like the lower animals, are diversely susceptible to its influence. Thus, ducks and pigeons can swallow large quantities with impunity, whilst the horse and the dog rapidly fall under its influence; and although we can hardly lay down any general rules to guide us in practice, we shall find that some persons can take very heavy doses, whilst others are poisonously affected with unexpected rapidity. We must specially remember that children always bear opium badly, one drop of laudanum having proved fatal to an infant; that anæmic persons also are said by Traube to be readily susceptible. To guard ourselves as far as possible from risk, we shall do well to begin with a moderate dose; and invariably to ask our patient whether he has ever taken it before.

As the system seems rapidly to accustom itself to the use of opium, we require gradually to increase the dose, and so completely do persons habituate themselves to the pleasurable sensations derived, that they willingly brave the resulting languor and digestive disturbance, and take it in enormous quantities. De Quincey used to take as much as 320 grains daily, and from half a pint to a pint of laudanum is by no means an uncommon daily allowance. Although the Turks and Chinese are the principal victims of this habit, much opium is also consumed in this way in some parts of England, and moderate opium-eaters abound in all ranks of society. We must therefore be very careful to warn our patients from time to time of the absorbing nature of this practice, and of its enervating effects on mind and body; and although it seems evident that continued good health is altogether incompatible with even moderate opium eating, and that its use by smoking is far more deleterious, still there is abundant evidence of the generally lowering tendency of the habitual use of this drug as an act of mere self-indulgence.

As regards the various pharmaceutical preparations of opium, when we wish to produce sleep we generally prescribe the tincture in a medium dose, the pil. saponis co., or the extract; whereas, if we merely wish to relieve pain, smaller doses may prove sufficient.

The astringent action is best secured by small doses, which bring the stimulant properties of the drug into play; and an incipient coryza may often be checked by 5 or 10 minims of laudanum, taken at bed-time.

For diaphoretic purposes the combination with ipecacuanha, as in Dover's powder (pulvis ipecacuanhæ compositus), is of service; and, for the relief of diarrhœa, we also call to our aid the astringent properties of chalk and kino, as in the pulvis cretæ aromaticus cum opio [Br.], and the pulvis kino compositus [Br.]; or the enema opii [Br.] may be soothing, both in this condition and as allaying, by nervous sympathy, various painful conditions of the uterus and bladder.

As an adjunct to cough mixtures, and as forming their really effective ingredient, we most conveniently prescribe opium under the form of either the tinctura camphoræ composita or of the tinctura opii ammoniata [Br.], as in Prof. Christison's well-known formula :—

℞. Syrupi scillæ	f℥ij;	or	64	Gm.
Aq. menth. pip.	f℥ij;	"	64	"
Tinc. opii ammoniatæ [Br.]	f℥ss;	"	16	"
Spiritus lavandulæ comp.	f℥ss;	"	16	"
Syrupi	f℥j;	"	32	" M.

Dose, f℥ss ter die.

In diabetes we may push the drug boldly, to the extent even of from 6 to 8 grains a day.

The many-sided actions of opium, which we have just described, are due to its complex constitution and to the large number of alkaloids which it contains. Of these, morphia is by far the most generally used, and in the form either of sulphate, the muriate, or the acetate, but more especially of the former, it has in very considerable measure superseded the crude drug, on which we were formerly obliged to depend. Its principal differences from opium are as follows :—

It is less astringent and antiphlogistic, and, interfering less with secretion, its use is not attended by so much headache, constipation, and dryness of tongue. It is more directly narcotic and anodyne, and is therefore a more convenient remedy when we wish merely to promote sleep or relieve pain.

Its bulk is smaller than that of opium, and it is devoid of smell.

The action of the heart becomes slower, and the arterial tension is raised.

The respiration may become irregular from a depressing action on the vagi.

The functions of the spinal cord are stimulated, and hence we occasionally meet with restlessness and muscular twitchings, which in some of the lower animals run on into true convulsions.

Irritability of the bladder is often observed, and troublesome itching of the skin, depending, in some cases, on the development of a minute papular or vesicular eruption. Some years ago a favorite mode of using morphia was by what is known as the *endermic* method, in which the powder was sprinkled over the raw surface of a blister; but this has now been almost entirely superseded by the hypodermic syringe. This ingenious little instrument enables us to inject a small quantity of morphia in solution beneath the skin, and the relief to suffering is usually immediate, and sometimes permanent. It matters little whether we introduce the remedy into the immediate neighborhood of the painful spot, our only caution being to avoid the vicinity of large bloodvessels or nerves, and to plunge the nozzle or needle of the syringe fairly through the skin into the adjacent cellular substance, preferably by perpendicular puncture. Some smarting occasionally follows the entrance of the fluid, which should be very slowly pumped in, and inflammation and abscess may occasionally be produced; but these accidents are rare, and the sting of the primary puncture may readily be obviated by freezing the skin with ether-spray. These injections are now very largely practised for the relief of pain, and more especially in *facial neuralgia*, *sciatica*, *lumbago*, in the passage of *biliary* or *renal calculi*, in *cancer*, and in a vast range of diseases where acute suffering is the main symptom, we are enabled to give our patients temporary, and sometimes permanent, relief. So great, indeed, is the popularity of this mode of treatment, that a new school of opium-eating, so to speak, has been formed, and morphia-injections have unfortunately been practised to a great extent as a mere development of self-indulgence. We must, of course, be very careful not to give even the most casual or indirect encouragement to such disastrous habits.

Some caution is always requisite in prescribing these injections for the first time, as not only severe sickness and vomiting have followed their use in many cases, but great prostration, with failure of the heart's action, and even death. We must therefore carefully watch our patient for some time after the completion of the little operation. We must never begin with a larger quantity than the sixth of a grain; and we are told, on good authority, that the combination of $\frac{1}{120}$ of atropia to each dose of morphia will effectually obviate all risk of these unpleasant consequences. For injection we may use either the injectio morphiæ hypodermica [Br.] (containing 1 gr. of the acetate in every 12 minims), or the elegant and convenient gelatine disks prepared by Messrs. Savory and Moore at the suggestion of Dr. Sansom, remembering that morphia acts in this way three times more powerfully than when taken by the mouth. For internal use we may prescribe either salt, remembering, however, the varying susceptibilities of different persons, and the fact that so small a quantity as half a grain has caused death; or we shall find the liquor morphiæ hydrochloratis [Br.] or acetatis [Br.], containing half a grain to the drachm, a convenient preparation.

Most of the other alkaloids contained in opium are merely subjects for physiological curiosity.

1. CODEIA, however, is now frequently used, not for its narcotic properties, which are feeble and transient, but for an undoubted soothing influence which it exerts over various painful affections of the kidney. It is also an established remedy in cases of diabetes, checking the secretion of sugar, and arresting, in some measure, the progress of the disease, its feeble narcotic properties here giving it a decided advantage over opium. It is also a useful remedy for the wearing cough of phthisis. Dose 1 to 10 or even 15 grains (.06 to 1. Gm.), which large doses have even been prescribed with marked advantage in diabetes by Pavy and others.

2. NARCEINE possesses only one-eighth of the narcotic properties of morphia, and is never used in medicine.

3. CRYPTOPIA is one-fourth as powerful as morphia, and in addition to its hypnotic properties it causes in the lower animals peculiar illusions of vision, with a tendency to convulsive action. It also is never used.

4. PARAMORPHIA or THEBAIA is purely excitant, and in doses of 1 grain it causes tetanic spasms.

5. NARCOTINA has no narcotic properties, but has some power as an antiperiodic.

6. PAPAVERINE is narcotic.

7. MECONINE is feebly narcotic.

[By the action of hydrochloric acid upon morphia at an elevated temperature (140° C.), it is transformed into a new base, *Apomorphia*, which is derived from morphia by the removal of a molecule of water. (Matthiessen.) It is not an alkaloid pre-existing in opium.]

APOMORPHIA is a powerful emetic, generally used by subcutaneous injection, in doses of $\frac{1}{16}$ gr. (.004 Gm.).

[ORIGANUM—COMMON MARJORAM.

The herb of Origanum vulgare U., S.

OFFICINAL PREPARATIONS.

Oleum Origani. Dose, gtt. ij–v (.12 to .30 Gm.).

The oil of origanum is rarely used, being largely superseded in commerce by the oil of thyme. It is an aromatic stimulant. Origanum in infusion has been used as a diaphoretic and emmenagogue, and externally as a fomentation.]

[OS—BONE.

Introduced as the source of Calcii Phosphas Præcipitata and Sodii Phosphas.]

OVUM—EGG.

[*The egg of Phasanius Gallus, U. S.*

Used in pharmacy in making emulsions, and is an ingredient in Mistura Chloroformi.]

White of egg is of use as an antidote to various corrosive poisons, as perchloride of mercury; and the yelk (vitellus) has nutritive properties.

[PAPAVER—POPPY CAPSULES.

The nearly ripe capsules of Papaver somniferum, U. S.

Occasionally, though rarely, employed in decoction or cataplasm; and the Syrupus Papaveris (Br.) is sometimes given to children, but is an uncertain preparation.]

PAREIRA—PAREIRA BRAVA.

[*The root of Cissampelos Pareira, U. S.*, but according to Hanbury and other authorities the origin is more correctly given as the root of the *Chondodendron Tomentosum.*

OFFICINAL PREPARATIONS.

Extractum Pareiræ Fluidum. Dose, f℥ss–j (2. to 4. Gm.).

Infusum Pareiræ. Dose, f℥j–ij (32. to 64. Gm.).]

LOCAL ACTION.

Pareira has no local action.

CONSTITUTIONAL ACTIONS.

Physiological.	*Therapeutical.*
Digestive and Secreting Organs. — Pareira acts in some measure as a diuretic, but its main influence is directed to the bladder, which it appears to stimulate and strengthen, improving the tone of its mucous lining, and lessening abnormal secretions.	Pareira is used in various *chronic bladder-affections*, but it seems to be very uncertain in its action.

[PEPO—PUMPKIN SEEDS.

The seeds of Cucurbita Pepo, U. S.

Pumpkin-seeds are an efficient tænicide in doses of one or two ounces. The decorticated seeds, beaten into a paste with sugar or milk, are given in the morning fasting, followed, in an hour or two, by a dose of castor oil.]

PHOSPHORUS—PHOSPHORUS.

[Dose, in substance, gr. $\frac{1}{60}$ to $\frac{1}{12}$ (.001 to .005 Gm.).]

ANTIDOTES.

There is no direct antidote, but turpentine is said to act as a prophylactic. [Old oil of turpentine is considered an antidote to phosphorus, followed by demulcents and evacuants. Large draughts of water containing magnesia in suspension are especially useful.] Sulphate of copper has also been proposed.

(Phosphorus is not used externally.)

Physiological Action.	*Therapeutical Action.*
1. Its action on the *nervous system* is tonic and stim-	1. Phosphorus is therefore a valuable agent in *nervous*

ulant, repairing the waste of tissue.

2. On the circulation it acts in the first place as a stimulant; the pulse rises and gains in fulness but not firmness, the face flushes, and eventually signs of peripheric capillary expansion ensue, ending in free perspiration. In large doses, however, it depresses to a dangerous degree the heart's action. In the anæmia of lymphadenoma the number of red blood-corpuscles is increased.

3. The temperature during the administration of phosphorus at first rises slightly, next becomes secondarily lowered by three or four degrees in consequence of the dilatation of the superficial capillaries and resulting evaporation from the skin.

4. On the urine phosphorus exerts the following influence: Its quantity is increased, it becomes reddish, clouded with lithates, acquiring a violet smell, and, ac-

debility, where the brain is weakened by anxiety, worry, overwork, or sexual excesses, and where too great amount of phosphates is excreted by the urine; and still more markedly in neuralgia, which has been shown by Anstie to depend on a feeble state of nerve tissue.

Hammond has advised its use in the early stages of *brain softening* from over-exertion.

2. Phosphorus may be given with decided benefit as a stimulant in *typhoid conditions*, where great feebleness exists, and as a general tonic it is of marked value, the appetite being sharpened, and a general sensation of well-being felt.

Its depressing action on the heart, however, is a serious drawback, fatal cardiac syncope having on several occasions followed the administration even of moderate doses.

cording to B. von Bauer, its proportion of urea is markedly increased.

Hæmaturia results from a poisonous dose.

5. On the intestinal secretion no effect is produced by small doses; but, in the event of a large quantity being taken, great and persistent irritation of the stomach and intestines results, causing pain, vomiting, and purging. Jaundice is also a symptom of its poisonous action, and after death fatty degeneration of the liver is generally found. As biliary acids are found in the urine, it is believed that the jaundice is due to obstruction of the ducts.

6. To the skin, phosphorus acts in some measure as an irritant. Purpura occasionally appears as a symptom of its poisonous action.

5. Much discussion has recently arisen respecting the remedial powers of phosphorus in *leucocythæmia* and *pernicious anæmia*, but the evidence is too conflicting (although opposing on the whole) to enable us to come to any decided opinion at present. The remedy is well worth trying, however, in these otherwise desperate cases, and Broadbent has recorded one remarkable success.

6. On this account, because of its stimulating the cutaneous circulation, phosphorus has been given with success in the eruptive fevers, such as *scarlet fever*, *measles*, etc., to develop an insufficiently developed, or prematurely faded eruption, and on account of its chemical and physiological affinities to arsenic it has been found of service in the treatment of chronic eczema and psoriasis. Broadbent explains its action by its effecting a change in the blood through a general influence on cell-growth in all the tissues and organs, and of especial influence on cell-growth in the skin as the drug passes through it.

7. Its effects on the osseous tissue are remarkable, as it has the property of causing necrosis of the jaw-bone, and this used to be common in lucifer-match makers. Some interesting experiments by Wegner have recently shown a marked influence of phosphorus in promoting the formation of bone; for when given to growing animals the cancellous tissue was rapidly transformed into hard bone, and, even in the case of those fully developed, the medullary canal was sensibly diminished by its use. Also, in cases of artificial fracture, not only was the resulting repair more rapid, but the quantity of bone thrown out was far in excess of the usual amount.

7. The experiments of Wegner would indicate its use in *rickets*, but careful and repeated trials have only convinced me of its great inferiority to cod-liver oil in this disease.

Poisonous Effects.

These we have seen to consist of intestinal irritation, cardiac syncope, and death from exhaustion, the *post-mortem* disclosing fatty and parenchymatous degeneration of liver, muscles, and tissues generally. $1\frac{1}{2}$ gr. has proved fatal. The blood becomes black, unduly liquid, and loaded with the products of tissue decomposition, such as uric acid, creatine, leucine, tyrosine, etc., this resulting from the ozonizing properties of the poison. The degenerative changes are probably due to the formation of fat from the albuminous constituents of the tissues themselves, by increased tissue change, or by diminished oxidation.

Phosphorus is given out from the system principally by the urine, the drug being oxidized in the system and eliminated as phosphates.

CONTRA-INDICATIONS AND DISADVANTAGES.

We must generally feel our way in prescribing phosphorus, and begin with small doses, for some persons are more susceptible than others to its over-action, and Anstie records a case in which three or four $\frac{1}{30}$ gr. doses gave rise to long-continued epigastric pain. Nor must we forget its tendency to cause fatty degeneration of internal organs, which is due to the formation of fat *in situ* from their albuminous constituents, by increased tissue change and diminished oxidation.

MODE OF ADMINISTRATION AND DOSE.

Much of our success, however, in giving phosphorus depends on the mode in which it is prescribed, and, as a general rule, capsules containing $\frac{1}{30}$ grain are found to be a convenient medium. It also goes well with cod-liver oil, but it is very difficult indeed to devise any liquid formula by which it is prevented from becoming rapidly inert by oxidation. Most of the pill-masses are useless from being made with insoluble materials which pass through the bowels unchanged.

[Objections against the use of phosphorus in substance arise from its insolubility in the intestinal fluids, and the danger of the local action in the stomach. The ethereal solution or tincture of phosphorus may be given in combination with cod-liver oil, or, more acceptably, with the elixir of Calisaya bark; and phosphorized resin (4 per cent.) offers a convenient means of administration in pill form, one grain being equal to gr. $\frac{1}{25}$ of phosphorus.]

The dose, speaking generally, is from $\frac{1}{50}$ to $\frac{1}{30}$ grain; or we may give the phosphide of zinc, a very convenient and reliable preparation, much praised by Ashburton Thompson, [in pills containing] from $\frac{1}{12}$ to $\frac{1}{4}$ grain [or, as recommended by Hammond, in combination with nux vomica:—

℞. Zinci phosphid.	gr. $\frac{1}{10}$;
Ext. nucis vom.	gr. $\frac{1}{4}$.
M. ft. pil.	

This is especially valuable in neuralgia.]

PHYSOSTIGMA—CALABAR BEAN.

[*The seed of Physostigma venenosum* (*Balfour*), *U. S.*]

The ordeal bean of Old Calabar.

[OFFICINAL PREPARATION.

Extractum Physostigmatis. Dose, gr. $\frac{1}{6}$ to $\frac{1}{3}$ (.01 to .02 Gm.).[1]

Eserine[2] (not officinal) or physostigma, may be used in solution (1 to 1000) to contract the pupils, or may be given internally in doses of gr. $\frac{1}{120}$–$\frac{1}{60}$, (.0005–.001 Gr.)].

ANTIDOTES.

In addition to the general principles of treating this form of poisonous action, we have here two physiological remedies at command—(1) atropia, which directly antagonizes the respiratory depression; and possibly (2) strychnia, which stimulates the cord.

LOCAL ACTIONS.

Physiological.	*Therapeutical.*
When applied to the surface of the body, Calabar bean exerts no special influence, but when introduced to the eye it causes very complete contraction of the pupil.	Calabar bean is therefore of use in ophthalmic surgery, to counteract the dilating effect of belladonna, and to prevent prolapse of the iris in cases of corneal injury or ulceration.

CONSTITUTIONAL ACTIONS.

I. *On Nervous System.*—1. The brain is quite unaffected, the mind, in cases of poisoning, remaining clear almost to the last.

[[1] Extract of physostigma has been given in much larger doses, as much as four grains every hour having been administered in tetanus, and even larger doses employed. Care should be taken, however, with these unusual amounts, as serious results may ensue.]

[2] [According to Pohl and Harnack, physostigma contains two active principles, *eserine*, opposed to strychnia, and *calabarine*, resembling strychnia in its effects upon the spinal cord.]

2. The spinal cord, however, is especially attacked, and to a diminution of its motor power is due the muscular enfeeblement and final paralysis which affect those brought fully under the influence of this drug. A still more remarkable result, however, is the total abolition of all reflex activity, the most energetic stimulation failing to elicit the slightest response.

3. Although, in the first stage of Calabar bean action, the motor nerves are unaffected, a secondary lessening of their conductivity is noted, and, with reference to the sympathetic system, an early excitation is fol-

2. The depressing action of Calabar bean on the reflex powers of the spinal cord led Fraser to propose it as a remedy for *tetanus*, and this mode of treatment has proved very satisfactory in alleviating the symptoms and checking the course of this terrible disease [and successful results have been reported from its employment.][1] It is of great importance that the drug should be early used and vigorously pushed, as there is every reason to believe that the cord is free from marked pathological changes during the first period of the disease.

Calabar bean has been tried without success in *chorea*, *epilepsy*, and other nervous disorders; but recently Dr. Crichton Browne has expressed his conviction, founded on the observation of a few cases, that it may prove useful in the general *paralysis of the insane*.

It has also been found to act as an effective antidote in *strychnia-poisoning*.

[[1] Case of Dr. Laycock in New Orleans Med. and Surg. Journal for March, 1882, cured by sulphate of eserine; see also Philada. Med. Times, April 8, 1882, p. 475.]

lowed by a secondary depression.

The contraction of the iris noted above, which takes place equally on local or internal administration, is considered due to paralysis of the peripheral vaso-motor nerve fibres, and to stimulation of the terminal filaments of the third nerve.

II. *Circulating Apparatus.*—Under small doses of Calabar bean, the heart's action becomes slower and stronger, and the arterial tension is notably increased; but when the system is brought more fully under the poisonous influence of the drug, the cardiac pulsations become feeble and irregular, and finally cease. These results are believed to be due to stimulation and subsequent exhaustion of the peripheral cardiac filaments of the vagi, and the primary contraction and subsequent relaxation of the arteries are explained in the same way.

III. *Respiration and Temperature.*—The breathing usually becomes slow and irregular, and the temperature falls a little.

IV. *Secreting Organs.*—Calabar bean tends to cause vomiting, with violent and painful contraction of the stomach and increased peristaltic movement of the intestines.

IV. [On account of its effects upon the secretions of the alimentary tract, it is used with advantage in constipation.]

Increase in the salivary and cutaneous secretion has also been observed.

POISONOUS ACTION. CAUTIONS. MODE OF ADMINISTRATION.

Calabar bean in small doses destroys life by paralyzing the respiratory centre and causing suffocation, but in larger quantity it proves more speedily fatal by cardiac syncope.

Caution is of course necessary in dealing with so poisonous a substance as this. It is seldom used internally, for in tetanus the functions of the stomach are suspended in great measure, and drugs are probably only very partially absorbed. Subcutaneous injection is therefore our best method, and we use a solution of the extract (from ⅛ to ⅓ gr. or .01 to .02 Gm.), neutralizing its irritating acidity by the addition of a little soda.

The alkaloid eserin, said to be the active principle, is unstable and difficult to extract, and is therefore practically useless. [The sulphate of eserin is ten times the strength of the extract, but is more liable to decomposition.

The following formula was used successfully in a case of traumatic tetanus by Dr. Laycock:—[1]

℞. Eserin. sulphat.	gr. ½	03 Gm.	
Glycerinæ,	fʒij	8	
Syrup. aurantii corticis,	fʒxiv	56	
Aquæ,	f℥ij	64	M.

Dose, one drachm.

The glycerine being added to prevent changes in the eserine. In the case referred to (9 years of age) a teaspoonful was given at first every hour, afterwards it was reduced as the symptoms ameliorated. During seven days of treatment the boy took three grains (.20 Gm.) in all, without any toxic effects of the remedy being noticed, other than its influence in controlling the disease.

The tincture of physostigma (not officinal) is recommended as a useful preparation of this remedy, which is not so well known as it deserves to be.]

[[1] New Orleans Med. and Surg. Journ., March, 1882.]

[Pilulæ.

The officinal PILLS are—

Pilulæ Aloës
“ “ et Assafœtidæ
“ “ et Mastiches
“ “ et Myrrhæ
“ Antimonii Compositæ
“ Assafœtidæ
“ Catharticæ Compositæ
“ Copaibæ
“ Ferri Compositæ
Pilulæ Ferri Iodidi
“ Galbani Compositæ
“ Hydrargyri
“ Opii
“ Quiniæ Sulphatis
“ Rhei
“ “ Compositæ
“ Scillæ Compositæ

Two Pill-masses are officinal: Pilula Ferri Carbonatis and Pilula Saponis Composita.]

[PIMENTA—PIMENTO.

Syn. Allspice.

The unripe berries of Eugenia Pimenta (De Candolle), U. S.

OFFICINAL PREPARATION.

Oleum Pimentæ. Dose, gtt. iij–vj (.20 to .40 Gm.).

Pimento is a warm, aromatic stimulant, but is more used as a condiment than as a medicine. As a carminative, the dose is from 10 to 40 grains (.65 to 2.65 Gm.).]

PIPER—BLACK PEPPER.

[*The unripe berries of Piper nigrum, U. S.*

OFFICINAL PREPARATION.

Oleo-resina Piperis. Dose, ♏j (.06 Gm.).]

Pepper is an acrid stimulant, acting more especially on mucous membranes, and hence, as a condiment, it is supposed to excite the secretion of the gastric juice. In former years it also acquired some reputation as a remedy for *hæmorrhoids*. [Piperin, not officinal, is sometimes added to antiperiodic pills, and it is certainly active, although it has been stated that it owes its effects to an impurity, the active oil of pepper.]

PIX BURGUNDICA—BURGUNDY PITCH.

[*A prepared resinous exudation from Abies excelsa (Lamarck's Ency. Method.), U. S.*

OFFICINAL PREPARATIONS.

Emplastrum Picis Burgundicæ.
Emplastrum Picis cum Cantharide.

Enters into Emplastrum Antimonii, Emp. Ferri, Emp. Galbani Compositum, Emplastrum Opii.]

Pitch is used externally in the form of plaster.

[PIX CANADENSIS—CANADA PITCH.

Syn. Hemlock.

The prepared resinous exudation from Abies Canadensis (Michaux, N. Am. Silva), U. S.

OFFICINAL PREPARATION.

Emplastrum Picis Canadensis.

Used only in the form of the plaster. The oil of the Abies, or Pinus Canadensis, or Hemlock Spruce (oil of spruce, oil of hemlock), has been given to produce abortion. A fluid extract of the bark (Ext. Pinus Canadensis fluid.), not officinal, is largely used as an astringent for gargles, vaginal douches, etc.]

PIX LIQUIDA—TAR.

[*The impure turpentine from the wood of Pinus palustris, and of other species of Pinus, prepared by burning, U. S.*

OFFICINAL PREPARATIONS, U. S.

Glyceritum Picis Liquidæ (♏ xxx, in f℥j). Dose, fʒj–iv (4. to 16. Gm.).

Infusum Picis Liquidæ (Tar, 20 per cent.). Dose, f℥ss–j (16. to 32. Gm.). Tar water. A *wine* or *beer of tar* has also been made by using beer in place of the water. It is given in the same doses.

Unguentum Picis Liquidæ (Tar, 50 per cent.).]

EXTERNAL ACTIONS.

Physiological.

Tar acts as a stimulant to the skin, and is apt to produce an irritable papular eruption. It is rapidly absorbed, and if allowed to remain in contact with the surface of the body, or if applied over an extensive cutaneous area, feverish symptoms ensue, with an abundant discharge of blackish urine, smelling strongly of tar.

Therapeutical.

Tar is an excellent application in cases of chronic scaly skin diseases, as *psoriasis.*

To lessen the risk of exciting an undue amount of irritation, it is well to wash the skin perfectly clean before renewing the application, and it is important to rub in the ointment thoroughly until it nearly disappears.

INTERNAL ACTIONS.

Tar seems to have a stimulating action on mucous membranes when taken internally. [Tar contains a certain proportion of creasote, upon which some of its therapeutic effects depend.]

The vapor of tar used to be a remedy of some reputation in *chronic bronchitis*, and recently Prof. Ringer has recommended two-grain pills, three times a day, as a most efficient remedy in *winter-cough.* The internal use of tar has also been praised by Dr. McCall Anderson in chronic skin diseases. [The syrup of tar (ʒj in f℥iv) is not officinal, but may be given in advanced *bronchitis*, in half-ounce doses. The infusion is stimulant and diuretic.]

PLUMBUM—LEAD.

[OFFICINAL PREPARATIONS, U. S.

Plumbi Oxidum (Litharge). Used in making Emplastrum Plumbi (Diachylon or Lead-plaster), which enters into Emplastrum Assafœtidæ, Emplastrum Ferri, Emplastrum Galbani Compositum, Emplastrum Hydrargyri, Emplastrum Opii, Emplastrum Resinæ (Adhesive plaster), Emplastrum Aconiti, Emplastrum Arnicæ, Emplastrum Belladonnæ, Emplastrum Saponis, Ceratum Saponis.

Liquor Plumbi Subacetatis (Goulard's extract).
Liq. Plumbi Subacetatis Dilutus (lead-water).
Ceratum Plumbi Subacetatis (Goulard's cerate).
Linimentum Plumbi Subacetatis.

Plumbi Acetas (Sugar of lead). Dose, gr. ij–v (.12 to .30 Gm.).
Suppositoria Plumbi (each gr. iij).
Suppositoria Plumbi et Opii (each gr. iij, and Ext. Opii gr. ss).

Plumbi Carbonas.
Unguentum Plumbi Carbonatis (ʒj in ℥j).

Plumbi Nitras (used as a disinfectant—Ledoyen's solution).

Plumbi Iodidum.
Unguentum Plumbi Iodidi.]

POISONOUS EFFECTS.

The first sign of chronic lead-poisoning is a bluish line running along the free margin of the gums composed of minute dots, and depending on the actual deposition of lead in the mucous membrane. To this succeed colic, wrist-drop, and the other symptoms mentioned above, the post-mortem disclosing chronic catarrh of the stomach and intestines, with the deposition of the metal in the bones, liver, kidney, brain, nervous and muscular fibres.

Chronic lead-poisoning has occasionally resulted from adulterated cider or from water, and indeed in a variety of ways, but it is most common in painters, who are brought much in contact with the carbonate in the practice of their business.

ANTIDOTES AND TREATMENT.

[Sulphuric acid forms an insoluble compound with lead, and, therefore, the soluble sulphates (alum, Epsom salts) are chemical antidotes to lead-poisoning; they often are given combined with sulphate of morphia to relieve pain and relax spasm.] Salt is said to be useful, because the metal is naturally eliminated from the kidneys as a chloride.

In poisoning by lead, we must give sulphate of magnesia, iodide of potassium, sulphur baths, and remove its after-effects by galvanism of the paralyzed muscles; but it is stated that sulphuric-acid lemonade, and a liberal indulgence in fatty articles of diet, may act in some degree as prophylactics.

LOCAL ACTIONS.

Physiological.

The external action of lead is partly sedative and partly astringent. [All the preparations of lead are used externally, but the acetate appears to be the one best adapted for internal use.]

Squire praises a glycerate of the subacetate of lead very highly in eczema.

Therapeutical.

Lead, in the form of subacetate, is much used as lotion for *erysipelas*, *acute eczema*, and various ulcerative conditions.

It forms a good collyrium in the more superficial inflammations of the eye; but we must remember that its tendency to deposition may cause a permanent white patch in corneal ulcers.

The powder of nitrate of lead has been shown to be a good application in *onychia maligna*.

[An improved process for making Hebra's diachylon ointment for *skin diseases*, is given by Deringer (New Remedies, 1880) as follows: Dissolve 200 Gm. of acetate of lead in one litre of distilled water, and 300 Gm. of white Castile soap in 1½ litre of warm distilled water. Filter both solutions and mix them. The precipitate is washed with water, then freed as much as possible from moisture by kneading, and one part of it is melted with 1½ parts of best olive oil, on the warm bath. The mixture is then triturated in a mortar until it forms a fine white salve.—(Proc. Am. Pharm. Assoc., 1881, p. 63.).]

INTERNAL ACTION AND USES.

1. *Brain and Nervous System.*—When lead is given in poisonous doses, a curious train of nervous symptoms show themselves, beginning with violent neuralgic pains and giddiness, and running on into delirium, with epileptiform convulsions, and subsequent melancholia. Sclerosis of the areolar tissue, with diminution of the nervous elements, has been found in certain of the sympathetic ganglia, but more especially the cœliac and cervical ganglia, Atrophy of the optic nerve is an occasional, though rare, complication of lead-poisoning.

2. *Heart and Circulation.*—During the action of lead, the heart becomes slow and the pulse smaller and harder, indicating a condition of contraction and tension of the arterial system; and this is by some supposed to be due to a primary effect on the sympathetic, whilst others hold that lead has a direct influence over unstriped muscular fibre, and most powerfully over that which encircles the arteries. Lead tends to produce pallor by destroying the red blood-corpuscles.

3. *Intestinal Tract.* — A prominent symptom of chronic lead-poisoning is obsti-

2. This contractile influence of lead over the smaller vessels explains its action in *internal hemorrhage*, as we know that *hæmoptysis*, more especially, may be very successfully treated by acetate of lead in doses of from ½ gr. to 3 grs. (.03 to .20 Gm.).

3. Acetate of lead is an excellent astringent in *diarrhœa*, more especially that of

nate constipation depending probably on contraction of the small intestine, and associated with violent colicky pain around the umbilicus. The appetite at the same time becomes bad, the tongue loaded, and nausea and even vomiting are observed. Gastro-enteritis is generally one of the symptoms of acute poisoning.

4. *Urinary System.*—Lead has the curious property of obstructing the elimination of uric acid from the blood through the kidneys, and may thus cause gout in painters and others who are exposed to the effects of the metal.

5. *Muscular*—Lead causes violent pains in the muscles, with a peculiar form of paralysis affecting the extensors of the forearms, and causing the well-known wrist-drop; and *post-mortem* we find fatty degeneration of the muscular structures.

The contracting power of lead over unstriped muscular fibre probably explains the tendency to abortion noted during its poisonous influence.

phthisis, and British [or *sporadic*] *cholera.*

Dr. Thorowgood has obtained good results from lead in obstinate *obstruction of the bowels.*

MODE OF ELIMINATION.

Lead is thrown out of the system by the urine, skin, bowels, and lacteal glands.

Mode of Administration, etc.

If we wish to administer lead internally, we generally prescribe either the acetate or pil. plumbi cum opii [Br.] (1 gr. of opium in 8), dose, 4 to 8 grs. (.25 to .50 Gm.).

Externally we find the liquor plumbi subacetatis dilutus the most convenient form.

PODOPHYLLUM—MAY-APPLE.

[*The rhizome of Podophyllum peltatum, U. S.*

Officinal Preparations, U. S.

Extractum Podophylli. Dose, gr. v–xv (.30 to 1. Gm.).

Resina Podophylli (sometimes called *podophyllin*). Dose, gr. $\frac{1}{8}$–$\frac{1}{4}$ (.007 to .015 Gm.).]

Local Action.

Podophyllin cannot penetrate the unbroken cuticle, but experiment has shown that it exerts its purgative influence when applied to a raw surface.

Constitutional Actions.

Physiological.

The only marked physiological property of this drug is that of irritating the duodenum and causing a profuse flow of watery evacuations, largely mixed with bile. Some controversy has taken place as to whether podophyllin can be called a cholagogue in virtue of any direct stimulation of the secreting structures of the liver, experimental evidence seeming to show that it probably acted by contracting the gall-bladder, and thus favoring the expulsion of its contents,

Therapeutical.

Podophyllin is a valuable remedy in *jaundice* and in the various forms of *functional liver affection.* It may be used in simple *chronic constipation*, in the constipation of children attended with the painful and difficult evacuation of hard, dry feces, and in the opposite condition of *diarrhœa* with pale and frothy motions.

In sick headache it also acts well.

[Podophyllum is an efficient substitute for jalap, and may be used for all purposes and by exciting the duodenum to sweep away the bile effused into it by the hepatic ducts. The more recent experiments of Rutherford and Vignal, however, have reinstated podophyllin in its old position as a true stimulant of the biliary secretion.

The mistake made by Bennett, who denied its cholagogue action, having arisen from the administration of too large doses, and the consequent antagonism of the intestinal irritation to the hepatic secretion.

for which the latter drug has been recommended.]

CAUTIONS AND MODE OF ADMINISTRATION.

We must remember that podophyllin is an uncertain drug, acting well in some cases, very slightly in others, whilst in a third class it causes much discomfort and griping. It is advisable, therefore, always to begin with small doses, as $\frac{1}{4}$ gr. or $\frac{1}{2}$ gr., and to prescribe it in the form of a pill, combined with other ingredients which may restrain its irritating action. Thus:—

℞. Resinæ podophylli gr. ij; or .12 Gm.
Extracti belladonnæ gr. iij; " .20 "
Pil. colocynthidis compositæ gr. xxxvj; " 2.30 " M.
Fiant pilulæ duodecim, quarum capiat unam omni nocte.

Ringer recommends a very convenient way of prescribing podophyllin for children, by dissolving a grain in a drachm of rectified spirit, and giving 5 or 6 drops three or four times a day, on a lump of sugar [or it may be simply painted on a bun].

POTASSIUM—POTASSIUM.

[OFFICINAL PREPARATIONS, U. S.

Potassa. Caustic Potassa.
Liquor Potassæ. Dose, ♏x–xxx (.65 to 2. Gm.).
Potassa cum Calce (equal parts) used as a caustic.
Potassii Acetas. Dose, gr. xx–ʒj (1.30 to 4. Gm.)

Potassii Bichromas (as an alterative). Dose, gr. $\frac{1}{5}$ (.01 Gm.). Rarely administered internally.
(Used in preparing Sodii Valerianas.)

Potassii Bitartras (Cream of Tartar). Dose, ʒj–iv (4. to 16. Gm.).
Antimonii et Potassii Tartras, Ferri et Potassii Tartras, Potassii et Sodii Tartras (Rochelle Salt), Potassii Tartras, Pulvis Jalapæ Compositus.

Potassii Bromidum. Dose, gr. xx–ʒj (1.30 to 4 Gm.).

Potassii Carbonas Impura (Pearlash).
Potassii Carbonas. Dose, gr. x–xxx (.65 to 2. Gm.).
(Extractum Spigeliæ et Sennæ Fluidum, Mistura Ferri Composita, Potassii Bicarbonas, Potassii Sulphuretum, and in making Chloroformum Purificatum and Spiritus Ætheris Nitrosi.)
Potassii Carbonas Pura. Dose, gr. x–xxx (.65 to 2. Gm.).
(Used in making Potassium Bromide and Cyanide, and Mistura Potassii Citratis.)
Potassii Bicarbonas. Dose, gr. x–ʒj (.65 to 4. Gm.).
(Liquor Magnesii Citratis, Liquor Potassæ, Liquor Potassii Arsenitis, Liquor Potassii Citratis, Mistura Potassii Citratis, Potassii Acetas, Potassii Carbonas Pura, Potassii Citras.)

Potassii Chloras. Dose, gr. v–xx (.30 to 1.30 Gm.).
Trochisci Potassii Chloratis.

Potassii Citras. Dose, gr. x–xxx (.65 to 2. Gm.).
Liquor Potassii Citratis. Dose, f℥ss (16. Gm.).

Potassii Cyanidum. Dose, gr. $\frac{1}{10}$ to $\frac{1}{12}$ (.005 Gm.).

Potassii Ferrocyanidum. Dose, gr. x–xv (.65 to 1. Gm.).
(Used in making Acidum Hydrocyanicum Dilutum, Argenti Cyanidum, Ferri Ferrocyanidum. Hydrargyri Cyanidum, and Potassii Cyanidum.)

Potassii Hypophosphis. Dose, gr. x–xxx (.65 to 2. Gm.).

Potassii Iodidum. Dose, gr. x–ʒj (.65 to 4. Gm.).
(Ammonii Iodidum, Hydrargyri Iodidum Rubrum, Liquor Iodinii Compositus, Plumbi Iodidum, Tinctura Iodinii Composita, Unguentum Iodinii, Unguentum Iodinii Compositum, Unguentum Potassii Iodidi (ʒj to ℥j).)

Potassii Nitras. Dose, gr. x–xv (.65 to 1. Gm.).

Potassii Permanganas. Dose, gr. j–v (.06 to .30 Gm.).
Liquor Potassii Permanganatis (gr. iv to f℥j).

Potassii Sulphas. Dose, gr. xx–ʒiv (1.30 to 16. Gm.).
Pulvis Ipecacuanhæ Compositus. (Dover's powder.)

Potassii Sulphis. Dose, gr. xv–ʒj (1. to 4. Gm.).

Potassii Sulphuretum. Dose, gr. ij–v (.12 to .30 Gm.).

Potassii et Sodii Tartras (Rochelle Salt). Dose, ℥ss–j (16. to 32. Gm.).

Potassii Tartras. Dose, ʒj–℥j (4. to 32. Gm.).

Poisoning.

Caustic potassa is a corrosive mineral poison. The symptoms produced by it are an acrid, caustic, urinous taste in the mouth, a sensation of burning heat in the throat, nausea, and sometimes vomiting of bloody matters. The surface becomes cold and clammy; the pulse quick and feeble; and there is often hypercatharsis, and violent colicky pains.

Morbid Appearances.—Strong marks of inflammation in the alimentary canal, with softening, erosion of the mucous coat, and, in some cases, perforation of the stomach.

Tests.

The alkaline reaction. It precipitates silver nitrate in the form of a dark-colored oxide. Carbonic acid water causes no precipitate. A concentrated solution, acidulated with muriatic acid, affords a deep-yellow precipitate with platinum bichloride. A solution of tartaric acid causes a white precipitate of cream of tartar.

Antidotes.

Vinegar and the diluted vegetable acids; to be followed by a free use of demulcents, or oleaginous mixtures.]

Local Action.

Physiological.	*Therapeutical.*
Caustic potash is a most powerful escharotic, withdrawing water from the tis-	Caustic potash, either in sticks or combined with lime in the form of potassa cum

sues, and thus destroying them. It has, however, the disadvantage of being very deliquescent, and this tendency to spread, beyond the part we wish to attack, has led to its practical abandonment as a local application.

The permanganate of potash (Condy's fluid) oxidizes and destroys many organic substances.

calce, was formerly used in the treatment of various forms of ulceration, and for the production of issues, which barbarous relics of antiquity are now fortunately discarded from practice. Liquor potassæ has been recommended to soften the great toe-nail and facilitate its removal when ingrowing; and the bicarbonate of potash forms a good lotion in *acute eczema*, as an injection in *leucorrhœa*, and as an application to *rheumatic joints*.

It is therefore antiseptic, and a good application to unhealthy ulceration.

INTERNAL ACTIONS AND USES.

Physiological.

1. *Brain and Nervous System.*—Potash salts, and more especially the nitrate, when given in large doses, exert a paralyzing action on the spinal cord, producing great muscular weakness and finally abolition of reflex sensibility.

2. *Heart and Circulation.*—Moderate doses of the nitrate raise the arterial tension and slow the heart's action, and if the drug is further pushed, the pulsations become weaker, still slower, and finally irregular, before the total arrest of movement supervenes. It prevents the coagulation of the fibrine, and

Therapeutical.

the red corpuscles are restrained in their functions of oxygenation. Gubler describes a sort of chronic poisoning in those who eat ham treated by pot. nit. to heighten its color, and consisting of weakness, palpitation, anæmia, and a kind of scurvy.

Potash salts cause the blood, and secondarily, the urine, to become alkaline, and any excess of uric acid may thus become neutralized.

3. *Intestinal Tract.*—Chlorate of potash moderates excessive action of the salivary glands, and assists the healing of ulceration about the gums, mouth, and throat. The salts of potash generally neutralize free acid in the stomach and intestines, and the nitrate in full doses may cause death by gastro-enteritis. Most of the potash salts are slightly purgative, but only the acid tartrate has any very decided action of this kind, causing as it does

2. This has been supposed to explain the beneficial action of potash in *acute rheumatism*, which is held to depend on an excess of uric acid. Much controversy has taken place with reference to the alkaline treatment of this disease, but I am decidedly of opinion that if large doses of bicarbonate of potash do not shorten its duration, they relieve symptoms, and lessen the tendency to cardiac complications. Potash acts well also in *gout* and *chronic rheumatism* by forming a soluble salt with uric acid.

3. Chlorate of potash, in doses of from 5 to 20 grains, is an admirable remedy in *mercurial salivation*, in various aphthous conditions, and in sore throat, whether produced by [*diphtheritic croup*], *scarlet fever*, or ordinary tonsillar inflammation, aud a wash or gargle may well be combined with its internal administration.

In doses of from 120 to 300 grains, cream of tartar is a good purgative, but is principally used in combinathe abstraction of a large quantity of watery fluid, without, however, stimulating the peristaltic movement of the intestines. The sulphate is also aperient in its action.

4. *On Secreting Organs.*—It will be remembered that, in speaking of acids, we referred to a law which has been more especially developed by Ringer, and which explains their power of checking acid secretions. Alkalies have precisely the opposite effect, arresting the activity of glands furnishing alkaline fluids, whilst they directly stimulate those whose secretion partakes of the opposite character.

Kidneys. — Most of the salts of potash, but more especially the acetate, nitrate, citrate, and acid tartrate, are diuretic, and the acetate, bicarbonate, and citrate, being converted into carbonate, speedily render the urine alkaline. Elaborate experiments have been made on the more precise alterations effected in the urine by the salts of potash. Prof. Parkes tells us that liquor potassæ increases the destructive metamorphosis of the nitrogenous tissues, and their elimination as urea, as well as that of the sulphur in the form of sulphates. The acetion with jalap, which, by stimulating the muscular movements of the small intestines, prevents the probable reabsorption of the watery fluid.

4. We can therefore readily explain, on physiological principles, why alkalies are so useful in hepatic congestion, why they may also stimulate the pancreatic secretion, and why their action is so beneficial in cases of dyspepsia depending on deficient supplies of gastric juice. On these principles, also, we may readily understand the very striking power possessed by a weak solution of potash in arresting the alkaline secretion so freely poured out by the skin in acute eczema.

Potash salts are therefore good diuretics in *heart disease*, *chronic kidney affections*, and various *dropsical accumulations;* and their action is much more marked under these conditions than when administered to healthy subjects, since we have seen that the acetate, which is perhaps the most active of the diuretic group, may even check the elimination of water from the kidneys during health. Dr. Roberts, of Manchester, has proposed to dissolve uric acid calculi by keeping the urine alkaline for months with citrate of potash.

tate has been shown to diminish the water, urea, and earthy salts; whereas the citrate, according to Dr. Nunneley, increases the water, but diminishes the urea and solids.

Potash may be used under other conditions. Thus in asthma the inhalation of the fumes from burnt blotting-paper soaked in a strong solution of nitrate of potash is often effectual; chlorate of potash is a useful ingredient in a cough linctus; the citrate is an agreeable febrifuge, and is valuable in many of the feverish and dyspeptic affections of children.

Duckworth (*Practitioner*, May, 1878) highly praises nitre paper in bronchitis, and says that a little Friar's balsam painted over the paper is an improvement. This treatment in asthma often fails from the fumes not being used freely enough.

Scurvy is held by some to be dependent on a deficiency of potash salts in the blood.

POISONOUS ACTION.

Partly from depression of the heart and partly from inflammation of stomach and intestines.

MODE OF ELIMINATION.

The potash salts, having a high diffusive power, pass readily into the blood, and are given out by the urine, in which the nitrate, chlorate, and sulphate reappear unchanged.

℞. Liquoris potassæ	f℥ij;	or	8		Gm.	
Tincturæ calumbæ	f℥ij;	"	8		"	
Infusi calumbæ	f℥vj;	"	102		"	M

Fiat mist. f℥j ter die.

Antacid mixture.

℞. Potassii carbonatis	ʒj;	or	4		Gm.	
Potassii acetatis	gr. xv;	"	1		"	
Potassii nitratis	gr. x;	"		65	"	
Aquæ	f℥ij;	"	64		"	M.

Fiat haustus quartis horis sumend.

This constitutes the "full alkaline" treatment recommended by Dickinson for acute rheumatism, and may be prescribed in effervescence.

[℞. Potassii chloratis	ʒij;	or	8	Gm.	
Syrupi limonis	f℥j;	"	32	"	
Aquæ	f℥iij;	"	96	"	M.

Dose, according to the age of the child: if under two years fʒj, from two to ten fʒij, over ten f℥ss, given every three hours, or every half hour in urgent cases. Recommended as almost specific in diphtheritic croup by Dr. T. M. Drysdale.]

℞. Potassii chloratis	ʒj;	or	4	Gm.	
Aquæ	f℥vj;	"	192	"	M.

S. f℥j ter die.

In ulcerated mouth or gums, or mercurial salivation.

℞. Potassii bicarbonatis	ʒss;	or	2	Gm.	
Aquæ	Oj;	"	500	"	M.

A good lotion in acute eczema.

℞. Potassii acetatis	ʒiss;	or	6	Gm.	
Aceti scillæ	fʒiv;	"	16	"	
Decocti scoparii [Br.]	ad f℥vj;	"	192	"	M.

Fiat mist. Dose, f℥j quartis horis.

Diuretic mixture.

℞. Spiritus ætheris nitrosi	fʒij;	or	8	Gm.	
Potassii nitratis	gr. xx;	"	1	30 "	
Decocti scoparii [Br.]	f℥iv;	"	128	"	M.

Fiat mist. Dose, f℥j ter die.

Diuretic.

℞. Potassii bitartratis	ʒiij;	or	12	Gm.	
Succi scoparii [Br.]	ʒvj;	"	24	"	
Aquæ	fʒvj;	"	192	"	M.

Dose, f℥j ter die.

Diuretic.

℞. Potassii chloratis	gr. xl;	or	2	60 Gm.	
Glycerinæ	f℥ss;	"	16	"	
Morphiæ muriat.	gr. jss;	"		10 "	
Syrupii	ad f℥iv;	"	128	"	M.

S. fʒj prout res poscit.

Dr. Douglas Powell's linctus for the chronic throat irritation of consumptive patients.

[Potassii bichromas.

Potassium bichromate, in powder or strong solution, is a good escharotic and antiseptic application to *warts*, and *ve-*

nereal excrescences. It has been used internally in ***secondary syphilis***, as an alterative, given in pill-form with some bitter extract. Occasionally it produces salivation. It acts as an emetic in doses of $\frac{3}{4}$ gr. In large amounts it is an acrid mineral poison, and causes a burning heat in the mouth, throat, and stomach; excessive and painful vomiting of bloody mucus; convulsions and palsy and death.

Morbid Appearances.—Softening and abrasion of the mucous coat of the stomach and intestines.

Tests.—In substance, by its orange-red color. In solution, by affording a rich red precipitate with nitrate of silver, a bright yellow with acetate of lead, a dingy green color and whitish turbidity with sulphuretted hydrogen.

Treatment.—The use of the potassium or sodium carbonates to neutralize the excess of chromic acid, followed by the administration of emetics. It would also be advisable to employ chalk or magnesia, in connection with milk, or the albumen of eggs.]

Potassii Bromidum.

(Bromide of Potassium is not used externally.)

Physiological Action.

1. *On Nervous Function.*—Long continuance in the use of potassium bromide tends to cause a sense of fatigue and general muscular prostration, with giddiness and staggering.

Brain.—The functions of the brain are lessened, and sleep results. [Observation has shown that the bromides actually reduce the amount of blood in the brain.]

Spinal Cord.—It has been proved by experiments on animals that the reflex irritability of the cord is lessened, as indicated by the anæsthe-

Therapeutical Action.

1. Potassium bromide has gained great repute within the last few years in the treatment of a large series of convulsive and spasmodic affections, and most especially in *epilepsy*, it being now thoroughly established that if we get our case sufficiently early we may absolutely cure it, and even if it is too confirmed for this result we may keep it in check. The cases most under the influence of the drug are those known as the *haut mal*, where violent struggling is followed by comatose sleep ; on the other hand, in

tic effect which is produced on the palate.

It has also been observed that the power of voluntary movement persists after the abolition of reflex function, proving that the influence of the drug is exerted probably either upon the afferent nerves or upon those portions of the cord which transmit the impulse from these nerves to the cells presiding immediately over motion.

The recent experiments of Ringer and Morshead show that, in the frog, the reflex functions of the cord are at first abolished, voluntary movement being unimpaired, but that later on, the voluntary functions also become paralyzed. They point out that these symptoms are entirely due to the potash, as potassium iodide and potassium chloride cause the same symptoms, which are never observed after the administration of the bromide of sodium. Potassic bromide also lessens the irritability of the sensory nerves.

Sympathetic System.—Potassium bromide is supposed to have a sedative influence over the sympathetic system of nerves; but on this point the evidence is very contradictory.

the *petit mal*, where the attack is indicated merely by passing unconsciousness, or when the seizures occur principally at night, the remedy will frequently disappoint us.

A New York committee of the Pathological Society, under the presidency of Dr. E. Seguin, have recently reported on a combination of potassium bromide with chloral in epilepsy, and praised its efficiency in arresting the paroxysm, avoiding remission, and keeping up the general condition of the patient.

When the remedy is acting well in epileptics, we will always readily detect a decided suppression of reflex sensibility (nausea) at the back of tongue and fauces.

Potassium bromide is believed to act in epilepsy by relieving the spasmodic contraction of vessels supplying a special vascular brain area which is thus deranged in function.

It is also of great benefit in the various convulsive seizures of children in *laryngismus stridulus*, *night terrors*, and also in those spasmodic symptoms which depend on meningitis or organic brain disease.

It is of service in *incontinence of urine*, *pertussis*, *cramp* of lower limbs, *chorea*, in *delirium tremens*, and in

2. *Effects on Circulation.*—No special action on the heart has been observed save some slight lowering of its action. The smaller arteries are believed to be contracted, the pulse becoming smaller; and we may thus explain the hypnotic action of the drug, the brain being rendered anæmic as in physiological sleep.

3. Its influence on *digestion* is not marked; for although it sometimes seems to lessen the appetite, this is not a constant result.

4. The effects on the *urinary secretion* have not been thoroughly made out.

5. Bromide of potassium has an undoubted influence over the generative organs, lowering their excitability, and even, in large doses, suspending their activity.

many of those forms of mental depression, nervous headache, and vague sensations, indicating nervous disturbance, which are so distressing to some women about the change of life.

It is said to be a good remedy in *sea-sickness*, from the sedative effect on the centre concerned in the reflex act of vomiting.

2. Bromide of potassium is an excellent narcotic, and causes refreshing sleep, more especially in cases of worry, mental anxiety, or overwork, a full dose being given at bedtime; and in *acute mania* its use in combination with chloral is highly praised by Clouston. It is said to heighten the action of opium, and lessen the occasional unpleasant symptoms of nausea, faintness, and giddiness. It has been found useful in *dyspepsia.*

4. It has been much praised by Begbie in *diabetes.*

5. It is useful in *priapism*, and in those forms of *menorrhagia* which depend on ovarian irritability.

Potassium bromide is eliminated from the system by the urine, breath, sweat, and milk (a case being recorded in which the child of a suckling mother taking the salt, became covered with acne). Some authorities think infants specially susceptible to its action.

Disadvantages and Contra-indications.

We have already noted the peculiar nervous symptoms occasionally caused by the bromides—giddiness, general muscular fatigue, even amounting to actual staggering in some cases. But in addition to this an unpleasant eruption of acne often breaks out on the face, and may arise from a very small dose. If, in spite of this, the remedy is persisted in, the whole body may eventually be covered with large and unsightly blotches, and boils, even rupial ulcers, have been observed.

To prevent the bromide rash, we are advised to add a little liq. arsenicalis [Br.] to each dose, and we may remove the spots by the following lotion—

℞. Sulphuris præcip.	ʒiij;	or	12	Gm.	
Spt. camphoræ	ʒj;	"	4	"	
Aq. calcis	ad ℥iij;	"	96	"	M.

Ft. lotio.
Apply morning and evening.

Dose and Mode of Administration.

The dose for epilepsy ranges from 10 to 60 grains, it being necessary to increase the quantity gradually, and continue its use for long periods, even years, occasionally leaving it off for a week or so, after which it seems to regain some of its lost effect.

Dose as a hypnotic gr. xx ad xxx. In other cases about gr. xx as an average. Children appear to be very susceptible to its use, acne being readily produced in them by moderate doses. As its taste is rather nauseous, we must disguise it thus—

℞. Potassii bromidi	gr. xxx;	or	2	Gm.	
Syrupi aurantii	fʒj;	"	4	"	
Aquæ aurantii florum q. s.	ad f℥ij;	"	64	"	M.

Fiat haustus horâ somni sumendus.

℞. Pot. bromidi	℥j;	or	32	Gm.	
Chloral hydratis	℥ss;	"	16	"	
Aquæ	℥viij;	"	256	"	M.

Dose, ʒj thrice a day.

Or, give it simply in water.

[A brominized solution of bromide of potassium has been recommended for laryngeal diphtheria or *pseudo-membranous croup*—

R.	Decocti altheæ	℥iij ʒvj ;	or	120		Gm.	
	Potassii bromidii	ʒj ;	"	4		"	
	Bromini	♏v ;	"		30	"	
	Syrupi simplicis	fʒviiss ;	"	30		"	M.

Dose, f℥ every hour during urgent symptoms.

For children under one year the quantity of bromine in the mixture should be reduced to 0.10 Gm., and for those from 1 to 4 years old to .20 Gm.[1]]

Potassii Iodidum—Iodide of Potassium.

CONSTITUTIONAL ACTION.

Physiological.	*Therapeutical.*
1. *On Brain and Nervous System.*—No special action on the nervous system has been observed, unless we hold that the uncomfortable sensations of misery and depression occasionally following its use, may be thus explained.	1. Iodide of potassium is of great service in many *brain-diseases*, and most especially those in connection with tertiary *syphilis*, where gummata, and other forms of tumor, cause those excruciating pains and varying nervous phenomena which have been so ably described by Drs. Broadbent and others.
2. The effects of iodine on the *circulation* have never been properly estimated, but some observers say that it tends to contract the vessels and cause increased rapidity of the heart's action. Potassic iodide has very swift diffusive power, entering the blood very rapidly, being given off within ten minutes after ingestion.	2. Potassium iodide has been used with great benefit by Drs. Balfour, Da Costa and others in *aortic aneurism*, several successful cases having been reported. It is difficult to explain the *rationale* of its action, but it is essential that large doses (twenty grains) be prescribed, to be repeated several times daily, and continued regularly for a year or more.

---

[1] Redenbacher-Ærtzliches Intelligensblatt, January 7, 1879. The Practitioner, vol. xxii. p. 208.

3. On *respiration* and *temperature* no effects have been noted.

4. Effects on *secretion*.

α. *Intestinal.*—Nothing special save occasional loss of appetite and disordered digestion.

β. *Urinary.*—Potassium iodide has some diuretic action, more especially in connection with other drugs.

γ. The salivary secretion is often markedly increased, true salivation being sometimes produced.

δ. It is also believed that the iodide of potassium has some special action on glandular tissues in general, increasing their absorptive powers, and even exciting them to absorb themselves; and in support of this last proposition it has been stated that, under its use, the mammæ and testicles have been observed to waste and disappear. This conclusion has probably been arrived at, however, by confusing the *post* with the *propter hoc*, and it is probable that the remedy does not so much actually stimulate the absorbents as reduce effused lymph to a condition more favorable for elimination.

β. Potassium iodide is occasionally used to heighten the diuretic action of other drugs.

δ. The iodide of potassium is often given to facilitate and hasten the absorption of inflammatory lymph in the later stages of pleurisy, pneumonia, pericarditis, etc.

5. It also has the power of removing various metallic substances from the tissues,—mercury and lead, for instance, being occasionally deposited in the form of an insoluble albuminate, and released from this condition by the action of the drug.

6. Finally, this salt has an irritating action on mucous membranes, causing redness, tingling, and free secretion, resembling much an ordinary catarrh, and also thinning and liquefying tenacious, morbid, mucoid secretions.

7. There are other important uses of potassium iodide which cannot be arranged under the preceding categories, and which must therefore be called specific. These are its influence over syphilis, gout, chronic rheumatism, and simple periostitis.

5. In cases of *chronic lead-poisoning*, so often met in house-painters, or where we wish to remove mercury from the system, we generally prescribe potassium iodide, and in the latter case we must not be surprised if our patient is suddenly seized with profuse salivation. This is explained by the released mercury finding its way back into the circulation, and exerting its usual influence on the salivary glands.

6. Potassium iodide is often prescribed in cases of *bronchitis* where the expectoration is thick, tenacious, and difficult of expulsion, and it here acts well by thinning the sputa. [In chronic bronchial disorders, hydriodic acid (page 310) affords a convenient method of administering iodine, especially to children.]

7. In cases of *tertiary syphilis*, this salt often acts like a charm. In the primary and secondary forms, it is of little or no use, but when the deeper tissues begin to be affected, and when we meet with deep rupial or other ulcerations of the skin, ulcers in the throat, periostitis, and head symptoms, we may then prescribe iodide with the certain expectation of relief. In chronic gout it is also of service, and in chronic rheumatism, more especially in those cases where

we meet with tenderness to pressure and nocturnal increase of pain. In simple periostitis of the skull, sternum, or tibia, which often results from exposure to cold, iodide of potassium has an almost magical effect, and will often bring about a cure after two or three days' treatment.

Potassium iodide is eliminated from the body by the urine, saliva, tears, milk, etc.; it can be detected in the urine in ten minutes after being swallowed, and it is rapidly given out, so that the whole may be recovered from the various secretions.

Disadvantages and Contra-indications.

As regards its disadvantages and contra-indications, we must remember the possible occurrence of iodism, to which unpleasant symptoms some persons are much more susceptible than others. These consist, in the first place, of irritation about the mucous membranes, running at the eyes and nose, sneezing, frontal headache, swelling of the eyes, salivation, and the following variety of eruptions, all of which are more likely to occur in patients suffering from kidney disease: 1. A rash resembling urticaria. 2. An eruption which probably, according to its various stages, may be either vesicular, papular, or pustular, closely resembling acne, or a more formidable condition of things may arise from its development into bullæ, which, occasionally bursting, may form fungoid masses, varying in size from a pea to a shilling. This is again held to differ from hydroa, which, Mr. Hutchinson tells us, is almost invariably due to iodide of potassium. 3. Small miliary petechial spots on the front of the leg, below the knee, occurring from two to six days after the moderate use of the drug. 4. A general eruption of purpura. Dr. Stephen Mackenzie records a fatal case in a child of five months, following a single 2½-grain dose. 5. A tendency to erysipelas has been noted in patients taking potassium iodide. It is, however, fortunate for the credit of one of our most useful and widely used drugs that these eruptions are rarely observed, the most common being a few acneiform pustules on the face, which careful microscopic observations have proved to be quite unconnected with the sweat glands, but to depend on plugging of the small vessels with coagula, followed by rupture and extrusion of their contents.

Mr. James Lane (*Harveian Lectures*) gives the result of a large experience in the treatment of syphilis, and advises us to begin with small doses, 3 or 4 grains, and increasing until 15 or 30 grains (.20 to 2. Gm.), are reached. If it causes much irritation, we may substitute the iodide of sodium.

In some persons a good deal of depression and digestive derangement is caused.

To Prevent Iodism.

Some few years ago, Sir James Paget observed that the addition of spiritus ammoniæ aromat. to potassium iodide not only lessened the chances of iodism, but enabled us to limit ourselves to a smaller dose, and this has come very generally into use.

Dose and Mode of Administration.

[The iodide of potassium should be prescribed alone, or only in combination with other preparations of iodine, or with corrosive sublimate.[1]

This salt may be given simply dissolved in water, or its taste may be well disguised by administering it in combination with compound syrup of sarsaparilla, or compound infusion of gentian.]

Potassium iodide as an antisyphilitic may be given in doses of from 3 to 30 grains, or even 60, according to the judgment of prescribers, it being necessary in obstinate cases to push the drug very freely.

[Dr. Taylor, at the meeting of the American Dermatological Association, said that patients would tolerate an ounce and a half daily and grow fat on it, the only physiological result being increased urination. He mentioned a case of nodes, where fourteen drachms daily were administered; nothing less would give the patient relief at night. He thought that in similar cases the addition of bromide of potassium, one drachm to seven of the iodide, would be of advantage.

---

[1] See page 44.

He also remarked that he had observed pains in the joints occasionally, even when small doses of iodide were being administered, which were considered as being due to the remedies employed. He offered a practical suggestion in reference to the prevention of these pains (which are diurnal and not nocturnal), which was that tincture of colchicum and tincture of hyoscyamus, combined with small doses of the iodide of potassium, would obviate them. Occasionally it is necessary to use camphorated oil, or some warming application externally. The joint trouble is sometimes polyarticular, sometimes non-articular.]

Professor Syme, however, used to say that all good effects can be obtained by two or three grains, and in ordinary cases of syphilis or periostitis, rheumatism, etc., this would in his opinion, be found a sufficient dose, copious dilution aiding its effects.

In aneurism we must give at least twenty grains, and in advanced syphilitic affections even larger doses are well borne.

℞. Potassii iodidi	gr. xl;	or 2	60 Gm.	
Spiritus ammoniæ aromatici	f℥ss;	" 16	"	
Syrupi aurantii	f℥j;	" 32	"	
Decocti sarsaparillæ compositi ad	f℥viij.	" 256	"	M.

S. Capiat unciam unam ter in die.

PRUNUM—PRUNES.

[*The dried fruit of Prunus domestica, U. S.*

Enters into Confectio Sennæ.]

Prunes are slightly purgative.

[PRUNUS VIRGINIANA—WILD CHERRY.

The bark of Cerasus Serotina (De Candolle) U. S.

OFFICINAL PREPARATIONS, U. S.

Extractum Pruni Virginianæ Fluidum. Dose, fʒj (4. Gm.).

Infusum Pruni Virginianæ. Dose, f℥ij–iij (64. to 96. Gm.).

Syrupus Pruni Virginianæ. Dose, f℥ss (16. Gm.).

Wild cherry bark is tonic and sedative, the freshly prepared preparations containing a small amount of hydrocyanic acid. The syrup, from its pleasant flavor, is much used as an ingredient in cough syrups for *phthisis*, or *chronic bronchitis.*]

[Pulveres.

The officinal POWDERS are—

Pulveres Effervescentes.—Soda, or effervescing powders.
" " Aperientes.—Seidlitz powders.
Pulvis Aloes et Canellæ.—Hiera Picra (holy bitter).
" Aromaticus.—Spice powder.
" Ipecacuanhæ Compositus.—Dover's powder.
" Jalapæ Compositus.—Jalap and cream of tartar.
" Rhei Compositus.—Rhubarb, magnesia, and ginger.]

PUNICA GRANATUM—POMEGRANATE.

[**Granati Fructus Cortex.** *The rind of the fruit of Punica Granatum, U. S.*

Granati Radicis Cortex. *The bark of the root of Punica Granatum, U. S.*

Pelleterine (not off.). The active principle. Dose, gr. xv (1. Gm.).

Physiological Action.

Pomegranate bark destroys a *tape-worm*, according to Küchenmeister, in three hours. [As it contains gallotannic acid, it should not be prescribed in combination with metallic salts. It may be given in the form of the fluid extract (not officinal), or it may be used in decoction (℥ij to Oj), as an astringent wash.]

Therapeutical Action.

It is much used as an *anthelmintic* in veterinary practice [and is sometimes given in infusion as a gargle, and as an injection in *gonorrhœa.* A *tape-worm* may be discharged in a few hours by administering the decoction through a stomach tube, and following it by castor oil ; or by a dose of the Pelleterine.

QUASSIA—QUASSIA.

[*The wood of Simaruba excelsa, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Quassiæ. Dose, gr. j–iij (.06 to .20 Gm.).

Infusum Quassiæ (ʒij to Oj). Dose, f℥j–ij (32. to 64. Gm.).

Tinctura Quassiæ (ʒj to Oj). Dose, gtt. xx–fʒj (1.30 to 4. Gm.).]

Physiological Actions.	*Therapeutical Actions.*
The action of quassia is directed to the gastro-intestinal mucous membrane, and it is probable that its intensely bitter taste may stimulate the secretion of gastric juice, as it certainly increases the appetite.	Quassia is much used as a tonic in *dyspepsia*, want of appetite, and general debility. Having no aromatic flavor, it is sometimes badly borne by weak stomachs, but, being very cheap, it is largely prescribed in dispensary practice, more especially in combination with iron.
Quassia is destructive to many of the lower forms of animal life.	It is therefore of service, given as an enema, for the destruction of *thread-worms*.

QUERCUS—OAK.

[**Quercus Alba.** *The inner bark of Quercus alba, U. S.*
Quercus Tinctoria. *The inner bark of Quercus tinctoria, U. S.*

OFFICINAL PREPARATION, U. S.

Decoctum Quercus Albæ (℥j to Oj). Dose, f℥iv (128. Gm.).]

Oak bark contains tannic and gallic acids, and the decoction is therefore of some value as an astringent in relaxed throat, leucorrhœa, etc.

[RESINA—RESIN.

The residue after the distillation of the volatile oil from the turpentine of Pinus palustris, and of other species of Pinus, U. S.

Ceratum Resinæ.
Ceratum Resinæ Compositum.
Emplastrum Resinæ.

Enters into Ceratum Cantharidis, Ceratum Extracti Cantharidis, Ceratum Sabinæ, and Emplastrum Hydrargyri.

Has no great therapeutic interest, except in its pharmaceutical relations. It has been recommended in five grain doses for chronic diarrhœa, but is seldom used internally.]

[Resinæ.

The officinal RESINS are—

Resina Jalapæ	Resina Scammonii.]
" Podophylli	

RHEUM—RHUBARB.

[*The root of Rheum palmatum, and of other species of Rheum, from China, Chinese Tartary, and Thibet, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Rhei. Dose, gr. ij–xxx (.12 to 1.30 Gm.).

Extractum Rhei Fluidum. Dose, gtt. x–xxv (.65 to 1.60 Gm.).

Infusum Rhei (ʒiv to Oj). Dose, f℥ij–iv (64. to 128. Gm.).

Pilulæ Rhei (each, gr. iij). Dose, 2 to 8 pills.

Pilulæ Rhei Compositæ (Rhei gr. ij, aloes gr. iss). Dose, 2 to 4 pills.

Pulvis Rhei Compositus (Rhubarb ℥iv; magnesia ℥xij; and ginger ℥ij). Dose, ʒss–j (2. to 4. Gm.).

Syrupus Rhei (℥iss to Oj). Dose, f℥ss–j (16. to 32. Gm.).

Syrupus Rhei Aromaticus (ʒij$\frac{6}{7}$ to Oj). Dose, for infant, fʒj (4. Gm.).

Tinctura Rhei (℥iss to Oj). Dose, f℥ss–j (16. to 32. Gm.).

Tinctura Rhei et Sennæ (℥⅓ to Oj). Dose, f℥ss–j (16. to 32 Gm.).

Vinum Rhei (℥ij to Oj). Dose, fʒj–iv (4. to 16. Gm.).]

CONSTITUTIONAL ACTION.

Physiological.

Like castor oil, rhubarb combines some astringent properties with its undoubted cathartic effects; and whilst the first mentioned action is no doubt due to the tannin which it contains, investigators have not yet determined on what special ingredient its purgative powers depend.

When taken in considerable doses, it not only stimulates the peristaltic movements of the small intestine, and more especially the duodenum, but it moistens and softens the feces, and increases most decidedly the secretion of bile, being, according to Rutherford, a certain though not a powerful hepatic stimulant, the bile secreted under its influence having the normal composition.

Therapeutical.

The astringent action of rhubarb renders it most useful in those forms of *diarrhœa* depending on the presence of indigestible matters in the alimentary canal, and where removal of the exciting cause, followed by rest of the irritated intestine, is sufficient to effect a cure.

It is a good tonic in some cases of *dyspepsia*, and forms a good purgative for children, more especially when combined with magnesia, as in the well-known Gregory's Powder [pulv. rhei comp.].

Prof. Rutherford's experiments on its cholagogue action would indicate its employment in *jaundice* and deficient secretion of bile.

The chrysophanic acid, or yellow coloring matter of rhubarb, is readily absorbed, and rapidly given out by the intestines, milk, sweat, and urine, to which latter secretion it imparts a yellow tinge, turning red on the addition of an alkali. [For use of chrysophanic acid in skin diseases, see Goa Powder in the succeeding section.]

DOSE, MODE OF ADMINISTRATION, ETC.

The smell and flavor of rhubarb are excessively nauseous, and, although we cannot effectually disguise either, we may at least render the drug moderately palatable by the following formulæ :—

℞. Infusi rhei	f℥ij ;	or	64	Gm.	
Potassii bicarbonatis	ʒj ;	"	4	"	
Tincturæ cinnamômi	fʒij ;	"	8	"	
Syrupi simplicis	fʒvj ;	"	24	"	M.

Dose, fʒj secundâ quâque horâ.

In the diarrhœa of children.

℞. Pulveris rhei	gr. xxx ;	or	2	Gm.	
Sodii carbonatis	gr. xv ;	"	1	"	
Spiritûs myristicæ	♏xxx ;	"	2	"	
Syrupi zingiberis	fʒj ;	"	4	"	
Aquæ menthæ piperitæ q. s. ad	f℥iss ;	"	48	"	M.

Misce, fiat haustus nocte sumendus.

Antacid and purgative.

ROSA—ROSE.

[**Rosa Centifolia.** *The petals of Rosa centifolia, U. S.*
Rosa Gallica. *The petals of Rosa Gallica, U. S.*
Oleum Rosæ. *The volatile oil obtained from the petals of Rosa centifolia, U. S.*

OFFICINAL PREPARATIONS, U. S.

Aqua Rosæ (Rosa centifolia). As a vehicle.
Confectio Rosæ. As an excipient for pills.
Infusum Rosæ Compositum (containing sulphuric acid). As a vehicle.
Mel Rosæ. As a vehicle.
Syrupus Rosæ Gallicæ. As a vehicle.
Unguentum Aquæ Rosæ (cold cream).

Also enters into Pilulæ Aloës et Mastiches, and Syrupus Sarsaparillæ Compositus.]

The various preparations of roses have little therapeutical significance. The cabbage-rose is used in the form of rose-water as an elegant vehicle; the red-rose petals as confection constitute a convenient basis for a pill mass, whilst, combined with sulphuric acid in the acid infusion, they make an excellent gargle, either alone or with alum, whilst they may occasionally be of service in concealing the nauseous flavor of sulphate of magnesia.

Hips [dog-rose, *rosæ caninæ fructus*, Br.] are also slightly astringent.

ROSMARINUS—ROSEMARY.

[*The leaves of Rosmarinus officinalis, U. S.*

Oleum Rosmarini. Used in linimentum saponis.

Is rarely used in this country except as a perfume.]

Rosemary, lavender, and peppermint are agreeable carminatives, much used in combination with other stimulant drugs.

[RUBUS—BLACKBERRY.

The bark of the root of Rubus Canadensis and of Rubus villosus, U. S.

OFFICINAL PREPARATIONS, U. S.

Extractum Rubi Fluidum. Dose, fʒss (2. Gm.).
Syrupus Rubi. Dose, fʒj–ij (4. to 8. Gm.).

Much prized as a tonic and astringent, and particularly adapted to the *diarrhœa* of relaxation. A decoction is also made in domestic practice (℥j to Oiss boiled down to a pint), of which f℥j–ij (32. to 64. Gm.) may be given three or four times daily.]

[RUTA—RUE.

The leaves of Ruta Graveoleus, U. S.

Oleum Rutæ. Dose, gtt. iij–vj (.20 to .40 Gm.).

Rue is stimulant, and in large doses, is an acro-narcotic poison. Moderate doses have some emmenagogue effects, and, in cases of poisoning, miscarriage generally occurs.]

SABADILLA—CEVADILLA.

[*The seed of Veratrum Sabadilla* (*Retzius*), *U. S.*

OFFICINAL PREPARATIONS.

Veratria. Not used internally.
Unguentum Veratriæ (gr. xx to ℥j).

POISONING.

In directly fatal doses, veratria depresses the whole nervous system; the respiration and circulation are gradually suspended; the convulsive movements, noticed under smaller doses, now pass into tetanus, the rigidity of the muscles of the chest impede respiration, and death takes place by asphyxia (Dr. Stillé).[1]

ANTIDOTES.

Vegetable astringent infusions, containing tannic acid, should be freely administered, the stomach washed out, followed by stimulants and an opium suppository, or enema. Tincture of digitalis would seem to be a physiological antidote. Whiskey may be given hypodermically on the approach of collapse.]

EXTERNAL ACTIONS.

Physiological.

The application of veratria to the skin causes first pricking and tingling, followed by redness and acute darting pain. To this succeeds numbness, due, in all probability, to some local anæsthetic influence on the extremities of the sensory nerves.

The slightest contact of veratria with the nasal mucous membrane causes violent irritation and prolonged sneezing.

Therapeutical.

Veratria has been used with success as a local application in cases of *neuralgia* of the fifth nerve, but its irritating properties must always be a barrier to its extensive employment. [The officinal ointment generally requires dilution ½ to ¾. When used, care should be taken not to rub the eyes with the greasy fingers, as violent irritation may result.]

---

[1] [National Dispensatory, Philada., 1879, p. 1478]

INTERNAL ACTIONS.

Veratria is never used internally in this country.

Brain and Nervous System.—No action on the brain.

Spinal Cord.—A good deal of elaborate, but unfortunately contradictory, experimental evidence has been adduced by various observers with reference to the effects of veratria on voluntary movement. In the first place convulsions and even tetanic spasms may be produced by the administration of the drug, but these are speedily followed by paralysis and complete muscular prostration; and the balance of testimony goes to show that this is due to a primary exciting and secondary paralyzing action on the muscular structures themselves.

Heart and Circulation.—Veratria first increases the action of the heart by stimulating its motor ganglia, but secondary slowing and depression rapidly ensue from an exciting action on the vagi.

Respiration is at first quickened, but subsequently retarded by the lowering effect of the drug on the respiratory centre. The temperature of the body falls.

Digestive and Secreting Organs.—Veratria often causes troublesome vomiting and purging.

SABINA—SAVINE.

[*The tops of Juniperis Sabina, U. S.*

Dose, in substance, gr. v–xv (.30 to 1. Gm.).

OFFICINAL PREPARATIONS, U. S.

Ceratum Sabinæ (fluid extract, f℥iij; resin cerate, ℥xij).

Extractum Sabinæ Fluidum. Dose, gtt. v–xv (.30 to 1. Gm.).

Oleum Sabinæ. Dose, gtt. ij–v (.12 to .30 Gm.).]

LOCAL EFFECTS.

Savin used to be applied in the form of ointment to blistered surfaces, with the view of encouraging suppuration, but this barbarous process is now happily abandoned. [It is stimulant and rubefacient, and is sometimes applied to warts, ulcers, and diseases of the scalp.]

INTERNAL USES.

Physiological.	*Therapeutical.*
Savin is a gastro-intestinal irritant, causing in large doses vomiting and purging; and it has also a powerful stimulating influence on the uterus.	Savin is sometimes used with criminal intent to produce abortion, and death has occasionally resulted from its irritant action. It is rarely used in medicine, although some authorities express faith in its emmenagogue powers.

SACCHARUM—SUGAR.

[*The sugar of saccharum officinarum, refined, U. S.*

SYRUPUS FUSCUS—MOLASSES.

The impure, dark-colored syrup, obtained in making sugar from Saccharum officinalis, U. S.

OFFICINAL PREPARATIONS.

Sugar enters into Pilula Ferri Carbonatis, Pilulæ Ferri Iodidi, and the various syrups.]

Sugar is principally used in the form of syrup as a flavoring adjunct. [Molasses is laxative; and molasses candy sometimes forms a good substitute for more active remedies in treating constipation in children.]

SACCHARUM LACTIS—SUGAR OF MILK.

[*A crystalline substance obtained from whey, U. S.*]

Milk, and sugar of milk, have no special therapeutical properties apart from their nourishing qualities.

[SAGO—SAGO.

The prepared fecula of the pith of Sagus Rumphii, and other species of Sagus, U. S.

Used, like arrowroot, as an article of diet for the sick, thoroughly boiled in water or milk (a tablespoonful to a pint) and flavored with sugar, lemon, spice, or wine, according to taste.]

[SALVIA—SAGE.

The leaves of Salvia officinalis, U. S.

OFFICINAL PREPARATION, U. S.

Infusum Salviæ (℥ss to Oj). Used as a gargle.

Sage is tonic, astringent, and aromatic. It has been used as a carminative in debility of the stomach with flatulence, and the infusion is a useful gargle, to which honey, alum, or vinegar may be added, but it strikes a black color with iron (it contains tannic acid). A weak infusion is sometimes used as a drink in fevers to allay nausea.]

SAMBUCUS—ELDER.

[*The flowers of Sambucus Canadensis, U. S.*]

Only used in the form of aquæ sambuci [Br.], which is a cooling and pleasant lotion. [The root of *Sambucus nigra* (common, black elder-berry) acts as a hydragogue cathartic. The expressed juice of the root may be given in doses of ℥j–ij until salivation, vomiting, and purging occur; or a decoction may also be made.]

SANGUINARIA—BLOODROOT.

[*The rhizome of Sanguinaria Canadensis, U. S.*

OFFICINAL PREPARATIONS, U. S.

Acetum Sanguinariæ (℥ij to Oj). Dose, ♏xv–xxx (1. to 2. Gm.).

Tinctura Sanguinariæ (℥ij to Oj). Dose, gtt. xx–xl (1.30 to 2.60 Gm.).]

This is a substance of energetic physiological properties, causing clonic convulsions of spinal origin, diminishing reflex action, weakening the force of the heart, and lessening arterial tension, lowering the temperature, dilating the pupil, and finally causing death by respiratory paralysis. It also possesses violent emetic properties, and stimulates hepatic secretion. It has been used more especially in America, and has been found useful in atonic dyspepsia and duodenal jaundice, in chronic catarrh, and some stages of bronchitis, and may be given in doses of 5 to 10 minims of the tincture three times a day. [The powdered root has been used as a stimulant in indolent ulcers, which has led some to consider it a specific for *cancer!*]

[SANTALUM—RED SAUNDERS.

The wood of Pterocarpus santilina, U. S.

Used only in pharmacy as a coloring agent, and enters into Spiritus Lavandulæ Compositus.]

SANTONICA—SANTONICA.

The unexpanded flowers of Artemisia Cina. (*Willkomm Botanische Zeitung*, 1872, *No.* 9), *U. S.*

OFFICINAL PREPARATIONS, U. S.

Santoninum. Dose, gr. ss–iij (.03 to .20 Gm.).
Trochisci Santonini (each, gr. ss).]

LOCAL ACTIONS.

Santonin has no local action.

INTERNAL ACTIONS.

Physiological.

I. *Brain and Nervous System.*—It is no doubt due to some influence on the brain that the peculiar derangement of vision, which is sometimes found accompanying the use of santonin, depends; as no staining of the ocular media has been observed, and slight hyperæmia of the retina is the only apparent local effect. Some observers note the first stage to be an exaggerated appreciation of the violet rays of the spectrum, but the most

Therapeutical.

I. Santonin has been recommended as a remedy for some affections of the optic nerve, but no trustworthy evidence has yet been adduced of its efficacy.

evident alteration in sight consists in very distinct yellow vision, all white objects being seen in a more or less pronounced saffron tinge, which begins about half an hour after the drug is swallowed. Associated with this we find a diminished or even abolished appreciation of the violet rays of the spectrum. A good deal of lassitude and mental depression usually follows the use of this medicine, and it must be cautiously pushed, as large doses have occasionally proved fatal from tetanic spasms and convulsions and coma.

II. *Respiration and Circulation.*—No special influence on these functions has been noted. [In poisoning there is accelerated and feeble pulse and rapid respiration.]

III. *Secreting Organs.*—Slight digestive disturbance is usually experienced, indicated by nausea, headache, and general *malaise.*

Urinary Organs.—Remarkable effects are here noted, consisting of a bright yellow coloration of the urine, beginning five minutes after a few grains have been swallowed, persisting

Santonin has not been used in any form of nerve disease, but it seems at least possible that it might prove of service in some forms of so-called *color-blindness.*

III. The real use of santonin in practice consists in its effect on the round worm, or *ascaris lumbriçoides*, which it speedily destroys. It appears to have no influence over the tape-worm, and it is an open question with regard to its service in cases of ascaris vermicularis.

for two or three days, and communicating a stain to linen, as in the case of jaundice. Should the urine happen to be alkaline, the color assumes a blood-red tinge, and the same change follows the addition of ammonia to the acid secretion. At the same time the flow of urine is increased, the patient experiences an irresistible desire to micturate, and in the case of children this may even give rise to complete temporary incontinence.

Santonin has been recommended as a remedy for *incontinence of urine*, and is said to succeed occasionally in cases of this troublesome affection after other remedies have failed.

MODE OF ELIMINATION.

Santonin is supposed to combine with the soda in the blood, and to be given out, in part at least, by the urine.

CAUTIONS. MODE OF ADMINISTRATION.

[Prof. Binz has related a case of santonin-poisoning in which, apparently, a small dose produced serious symptoms. Two lozenges, containing less than a grain, were followed, 10 hours afterwards, by a convulsive attack which recurred several times during the next few days. The child never had convulsions before. It would seem as if the troches must have contained more of the drug than was suspected.[1]]

As already observed, serious symptoms have been observed to follow the use of santonin, and we shall do well to warn our patients of the urinary irritability which is invariably experienced in greater or less degree. Dr. Sieveking has also drawn attention to the occurrence of urticaria following the administration of santonin, and Drs. Dyce and Ogson have given a suggestive hint by pointing out that its long-continued use causes the development of cataract in young animals.

[When retained in the system santonin becomes converted into *xanthopsin*, which appears in the urine. Poisonous symptoms are produced by this new substance, but they may be prevented by combining the santonin with an antacid and purgative, and in practice it is found that they are never produced when the santonin is combined with calomel, and soda.]

---

[1] [Phil. Med. Times, Aug. 1877, p. 551.]

Its taste is not unpleasant, but as it is insoluble in water it may be mixed with jam or treacle, or simply sprinkled on bread and butter [or preferably, in the officinal lozenge.]

SAPO—SOAP.

Soap made with soda and olive oil, U. S.

OFFICINAL PREPARATIONS, U. S.

Ceratum Saponis.
Emplastrum Saponis.
Linimentum Saponis.
Pilulæ Saponis Compositæ.

Enters into Extractum Colocynthidis Compositum, Pilulæ Aloes, Pil. Aloes et Assafœtidæ, Pil. Assafœtidæ, Pil. Opii, Pil. Rhei, Pil. Rhei Compositæ, and Pil. Scillæ Compositæ.]

Soap is not applied to any therapeutical purpose, except the hard variety, which enters into the construction of some pill masses, and both the hard and soft aid in the construction of liniments and plasters.

[Soft, or potassa-soap, sometimes termed green soap, ***sapo viridis***, has been recommended by Hebra in alcoholic solution, under the name of ***spiritus saponis kalinis*** (2 pts. soap, 1 pt. alcohol), in the treatment of chronic eczema.]

SARSAPARILLA—SARSAPARILLA.

[*The root of Smilax officinalis (Humboldt and Bonplandt) and of other species of Smilax, U. S.*

OFFICINAL PREPARATIONS, U. S.

Decoctum Sarsaparillæ Compositum (sarsaparilla, sassafras, guaiac, mezereon, and liquorice). Dose, f℥iv (128. Gm.).

Extractum Sarsaparillæ Fluidum. Dose, f℥ss (2. Gm.).

Extractum Sarsaparillæ Compositum Fluidum. Dose, fʒj (4. Gm.).

Syrupus Sarsaparillæ Compositus (℥iv to Oj). Dose, f℥ss (16. Gm.).]

INTERNAL ACTIONS.

Physiological.

Sarsaparilla has been credited with diaphoretic, diuretic, and other powers; but none of these have stood the test of rigid investigation, and it is difficult to find any convenient heading under which to class this popular drug, unless we shelve the difficulty by calling it an "alterative."

Therapeutical.

Nor is it easier to give any decided opinion regarding its therapeutical merits; for whilst some surgeons, like the late Mr. Syme, hold it to be quite useless, others believe it to be of service in constitutional *syphilis*, *chronic skin disease*, etc. One point of difficulty in arriving at any decided conclusion is, that it is usually prescribed along with three other drugs in the compound decoction; but the late Mr. Gascoyne used to say that he had found great benefit in the treatment of the *tertiary forms of syphilis* by giving full doses of the freshly made infusion.

SASSAFRAS—SASSAFRAS.

[*The bark of the root of Sassafras officinale, U. S.*

Sassafras Medulla. *The pith of the stems of Sassafras officinale, U. S.*

Oleum Sassafras. Dose, gtt. ij–x (.12 to .62 Gm.).

OFFICINAL PREPARATION, U. S.

Mucilago Sassafras Medullæ (ʒij to Oj).

Enters into Extractum Sarsaparillæ Compositum Fluidum, and Decoctum Sarsaparillæ Compositum.]

This plant seems only to have acquired any therapeutic importance by reason of its combination with other drugs in the decoctum sarsaparillæ comp. The mucilage may be used as a soothing application in conjunctivitis. [The oil is a pleasant flavoring substance, and is considered carminative.]

SCAMMONIUM—SCAMMONY.

[*A resinous exudation from the root of Convolvulus Scammonia, U. S.*

Dose, in substance, gr. v–xv (.30 to 1. Gm.).

OFFICINAL PREPARATIONS, U. S.

Resina Scammonii. Dose (given in milk), gr. iv–viij (.25 to .50 Gm.).

Extractum Colocynthidis Compositum. Dose, gr. v–xxx (.30 to 2. Gm.).]

INTERNAL EFFECTS.

Physiological.	*Therapeutical.*
Scammony causes a good deal of irritation of the alimentary canal, and produces copious watery stools, often attended with griping. For its proper action, previous solution in the bile, and combination with its soda, are requisite.	Scammony is a purgative used in *cerebral* and *dropsical affections;* and, being comparatively tasteless, it is well adapted for children, forming a convenient purgative for the removal of *ascarides.*

SCILLA—SQUILL.

[*The bulb of Scillæ maritima, U. S.*

Dose, in substance, gr. ij (.12 Gm.).

Active principles, scillin and skulein (or scillitin), the latter being most tonic and bitter.

OFFICINAL PREPARATIONS, U. S.

Acetum Scillæ (℥ij to Oj). Dose, ♏x–ʒj (.65 to 4. Gm.).

Syrupus Scillæ. (Acetum Scillæ with sugar). Dose, the same.

Pilulæ Scillæ Compositæ (Squill gr. ss, ammoniac and ginger each gr. j). Dose, 3. to 5 pills.

Syrupus Scillæ Compositus (Tartar emetic gr. j in f℥j). Dose, gtt. x–fʒj (.65 to 4. Gm.).

Tinctura Scillæ (℥iij to Oj). Dose, ♏x–xx (.65 to 1.30 Gm.)

Extractum Scillæ Fluidum. Dose, ♏ij–iij (.12 to .20 Gm.).]

INTERNAL EFFECTS.

Physiological.	*Therapeutical.*
In large doses, squill may act as an emetic, and cause violent vomiting with purging.	Squill is never used as an emetic [except, in its combination with tartar emetic as "HiveSyrup"(SyrupusScillæ Compositus), which has been recommended in *spasmodic croup*. It may be repeated at short intervals, until vomiting occurs.]
It also stimulates the bronchial mucous membrane, and increases the urinary secretion.	It is, however, a good expectorant, increasing the bronchial secretions, and is one of the most universal additions to prescriptions for the relief of various chronic lung affections, as *bronchitis*, and also in *whooping-cough*. It is also a tolerably efficient diuretic, only to be used, however, when no irritation exists about the kidneys.

SCOPARIUS—BROOM.

[*The tops of Sarothamnus Scoparius* (*Wimmer*), *U. S.*]

LOCAL EFFECTS.

No local action has been described.

CONSTITUTIONAL ACTIONS.

Scoparius has some influence over the digestive and	Scoparius is an excellent diuretic, and is largely used

secreting organs, causing, in large doses, vomiting and purging, but in smaller increasing very considerably the urinary water. Two active principles have been extracted from the drug, regarding whose physiological actions some difference of opinion exists. Thus SCOPARIN is believed by one class of observers to be the diuretic factor in broom-tops, whilst others assert that it has no such property. SPARTEIN has also been very variously described, but the balance of testimony goes to show that it has very definite toxic powers, lowering the reflex action of the spinal cord, paralyzing the motor nerves, suspending the electrical excitability of the vagus, and finally causing death by respiratory paralysis. for the purpose of removing dropsical accumulations. If we can succeed in stimulating the kidneys effectually by a combination of this and other drugs, we may hope to hold in check and disperse the *anasarca* of cardiac and chronic kidney-disease, and to aid the removal of the watery fluid of *hydrothorax* and *ascites*. [An infusion of scoparius (℥j to Oj), in conjunction with purging by compound jalap powder, is often used in cardiac dropsy, to relieve an overloaded right side of the heart, with mitral insufficiency.]

Dose and Mode of Administration.

Scoparius is seldom prescribed alone, but is most usually made the basis of diuretic mixtures, on the well-known principle of combination, which is here of essential service.

R.	Potassii acetatis	ʒiss;	or	6	Gm.	
	Aceti scillæ	fʒiv;	"	16	"	
	Decocti scoparii [Br.] q. s. ad	f℥vj;	"	192	"	M.

Fiat mistura. Capiat unciam unam quartis horis.

℞.	Tincturæ digitalis	♏x;	or		65 Gm.	
	Spiritûs ætheris nitrosi,					
	Spiritûs juniperi,	āā fʒss;	"	2	"	
	Succi scoparii [Br.]	fʒj;	"	4	"	
	Aquæ q. s. ad	f℥j;	"	32	"	M.

S. Fiat haustus, ter die sumendus.

SENEGA—SENEKA.

[*The root of Polygala Senega, U. S.*

Dose, in substance, gr. xx (1.30 Gm.).

OFFICINAL PREPARATIONS, U. S.

Decoctum Senegæ (℥j to Oj). Dose, f℥j (32. Gm.).

Extractum Senegæ (alcoholic). Dose, gr. j–iij (.06 to .20 Gm.).

Extractum Senegæ Fluidum. Dose, ♏x–xxx (.65 to 2. Gm.)

Syrupus Senegæ. Dose, fʒj (4. Gm.).

It also enters into Syrupus Scillæ Compositus.]

LOCAL EFFECTS.

No external or local action has been described.

CONSTITUTIONAL ACTIONS.

Physiological.	*Therapeutical.*
The principal action of senega is that of stimulating the mucous membrane of the bronchial tubes, and possibly, by a tonic influence on their muscular tissues, facilitating the expulsion of their contents. It has also been accredited with diaphoretic, diuretic, and emmenagogue properties, but is seldom employed in any other capacity than as an expectorant.	Senega is of great service in the more chronic conditions of *pneumonia* and *bronchitis*, where it seems to help the patient to get rid of the large quantities of secretion frequently accumulated within the lungs. Theoretically at least, its stimulating properties would contra-indicate its use in the more acute pulmonary affections, but in the later stages of bronchitis, and more especially those cases occurring among the very old, or young, it is of real value.

DOSE AND MODE OF ADMINISTRATION.

The infusion is the preparation most commonly employed, and it is generally combined with carbonate of ammonia and other expectorants. Thus :—

℞. Ammonii carbonatis	gr. iv ;	or		25	Gm.
Tincturæ scillæ	♏xv ;	"	1		"
Tinct. opii camphorat.	♏xxv ;	"	1	60	"
Extracti glycyrrhizæ	gr. v ;	"		30	"
Infusi senegæ [Br.] q. s. ad.	f℥j ;	"	32		" M.

Fiat haustus ter die sumendus.

SENNA—SENNA.

[*The leaflets of Cassia acutifolia (Delile), of Cassia aborata (De Candolle), and of Cassia elongata (Lemaire, Journ. de Pharm.*, vii. 345), *U. S.*

OFFICINAL PREPARATIONS, U. S.

Confectio Sennæ. Dose, ʒij–ij (4 to 8 Gm.).

Extractum Sennæ Fluidum. Dose, fʒj–iv (4. to 16. Gm.).

Infusum Sennæ (℥j to Oj). Dose, f℥ij–iv (64. to 128. Gm.).

Tinctura Rhei et Sennæ. Dose, f℥ss–ij (16. to 64. Gm.),

And enters into Syrupus Sarsaparillæ Comp.]

INTERNAL EFFECTS.

Physiological.	*Therapeutical.*
Senna irritates the small intestine, causing copious, thin, yellow evacuations, and stimulating the peristaltic movements of the bowel.	Senna is a most useful purgative, ranking among the cathartics with slightly drastic tendencies, and it may be prescribed in simple *constipation*, in *dyspepsia*, and in a large variety of conditions where rapid and effectual unloading of the bowels is required.

DOSE AND MODE OF ADMINISTRATION.

Senna is seldom prescribed alone, as it is then apt to cause irregular contraction of the intestines and griping. It is therefore usually combined either with other purgatives, as mag. sulph. (black draught), or with various aromatics, as in the confection and compound mixture.

Cassia and tamarinds have both a slightly purgative action, but are only used as ingredients in various compound preparations, as the confection of senna. [The syrup of senna (not officinal) is a good purgative for young children, dose f℥j–iij. It makes a good emulsion with castor oil.]

SERPENTARIA—VIRGINIA SNAKEROOT.

[*The root of Aristolochia Serpentaria, of Aristolochia reticulata, and of other species of Aristolochia, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Serpentariæ Fluidum. Dose, gtt. xx (1.30 Gm.).

Infusum Serpentaræ (℥ss to Oj). Dose, f℥j–iv (32. to 128. Gm.).

Tinctura Serpentariæ. (℥ij to Oj). Dose, f℥j–ij (4. to 8. Gm.).]

This drug is probably a bitter tonic, but the other virtues with which it has been credited seem to rest on no very stable foundation. [It belongs to the class of the aromatic bitters, and is a good addition to other tonics, as cinchona, and is included in the composition of the popular Huxham's tincture—Tinctura Cinchonæ Comp.]

SEVUM—SUET.

[*The prepared suet of Ovis Aries, U. S.*

Used only in pharmacy, and as an ingredient in Ceratum Resinæ Compositum, Unguentum Hydrargyri, and Ung. Picis Liquidæ.

An ointment made by adding calomel gr. v–x to suet ℥j is used with good effect in *eczema capitis.*]

SINAPIS—MUSTARD.

[**Sinapis Alba.** *The seed of Sinapis alba, U. S.*
Sinapis Nigra. *The seed of Sinapis nigra, U. S.*

OFFICINAL PREPARATION, U. S.

Charta Sinapis. Mustard papers (4 inches square).]

LOCAL ACTIONS.

Physiological.	*Therapeutical.*
Mustard applied to the skin causes a vivid redness, with violent smarting and itching, and, if the application be continued too long, vesication may follow, and even troublesome ulceration. [This is said not to happen when mustard papers are used, or when tissue paper is placed on the front of the poultice.]	Mustard is used, first, for the relief of pain, and there can be no doubt that benefit is thus derived in many nervous, rheumatic, and inflammatory affections. In *neuralgia*, *lumbago*, *sciatica*, *pleurodynia*, *pleurisy*, *pneumonia*, *peritonitis*, *colic*, and a vast variety of painful disorders, we may expect to alleviate suffering in some measure by the use of sinapisms, and at other times we use this mode of drawing blood to the surface, and so relieving the congestion of deeper parts, on the principle referred to under the heading of "Counter-irritation." [p. 69.]
2. [The irritation of the peripheral extremities of the sensory nerves in the skin by the action of the volatile oil, is reflected to the centres from which these nerves arise, producing revulsive effects; and, by reflex action, through the vasor-motor nerves, it thus influences the conditions of vascularity and nutrition of adjacent organs, the brain or the lungs, for instance.]	2. Mustard poultices are most valuable in arousing patients from the dangerous comatose condition into which they occasionally drift in the course of some of the acute inflammations; and sinapisms applied to the feet and calves are of service in the stupor of *narcotic poisoning* and in *uræmic coma*.
	Mustard baths may be employed to bring back the eruption of some abortive cases of the exanthemata, or as a stimulant in *acute bronchitis*, or in the *convulsions of children*.

CONSTITUTIONAL ACTIONS.

Physiological.	*Therapeutical.*
Digestive Organs.—Mustard increases the appetite by irritating the mucous membrane of the stomach, but does not increase the secretion of gastric juice.	Mustard is extensively used as a dietetic condiment.
It acts as a prompt and effectual emetic of the direct class.	This emetic power is of great value in cases of poisoning, as mustard is always at hand, and can be used at once.

MODE OF ADMINISTRATION.

A mustard poultice must be made with cold water, for we know that hot water dissipates the volatile oil on which the counter-irritation depends, vinegar destroys it, and alcohol prevents its formation. It must be kept on from twenty minutes to half an hour, according to circumstances. [Very strong mustard may have too much effect upon tender skins, and it should always be mixed with flour or starch for children.]

SODIUM—SODIUM.

[**Sodii Acetas.** Acetate of Sodium. Dose, gr. xx–ʒij (1.30 to 8. Gm.).

Sodii Bicarbonas Venalis. (Used in making Aqua Acidi Carbonici, and Sodii Bicarbonas..

Sodii Boras (Borax).[1] Dose, gr. x–xl (.65 to 2.60 Gm.).
Mel Sodii Boratis (ʒj to f℥i).
Glyceritum Sodii Boratis (ʒij to f℥j).

Sodii Carbonas. (In making Aluminii Sulphas, Antimonii Oxysulphuretum, Bismuthi Subnitras, Cadmii Sulphas, Bismuthi Subcarbonas, Calcii Carbonas Præcipitata, Ferri Subcarbonas, Liquor Sodæ, Liquor Sodæ Chlorinatæ, Pilula Ferri Carbonatis, Pilulæ Ferri Compositæ, Potassii et Sodii Tartras, Sodii Carbonas Exsiccata, Sodii Phosphis, and Zinci Carbonas Præcipitata.)

Sodii Chloridum (table-salt). (For making Calomel and Corrosive Sublimate.)

---

[1] For Boracic Acid, see page 441.

Sodii Hypophosphis. Dose, gr. x–xxx (.65 to 2. Gm.).

Sodii Hyposulphis. Dose, gr. x–xx (.65 to 1.30 Gm.).

Sodii Nitras. (For making Sodii Arsenias.)

Sodii Sulphas. *Glauber's Salt.* Dose, ℥ss–j (16. to 32. Gm.). (Also used in making Sodii Carbonas.)

Sodii Sulphis. Dose, gr. xx–ʒj (1.30 to 4. Gm.).

Officinal Preparations, U. S.

Soda. Caustic Soda.
  Liquor Sodæ. Dose, well diluted, ♏v–x (.30 to .65 Gm.).

Sodii Arsenias. Dose, gr. $\frac{1}{12}$–$\frac{1}{3}$ (.005 to .02 Gm.).
  Liquor Sodii Arseniatis. Dose, ♏iij–v (.20 to .30 Gm.).

Sodii Bicarbonas. Dose, gr. x–xx (.65 to 1.30 Gm.).
  Pulveres Effervescentes. *Soda powders.*
  Pulveres Effervescentes Aperientes. *Seidlitz powders.*
  Trochisci Sodii Bicarbonatis.

Sodii Carbonas Exsiccata. (Used in making Sodii Arsenias.)

Sodii Phosphas. Dose, as a cholagogue, gr. xx–xl, or as a purgative, ℥j–ij (1.30 to 64. Gm.). (Used in making Ferri Phosphas and Ferri Pyrophosphas.)

Liquor Sodæ Chlorinatæ. *Labarraque's Solution.* Dose, fʒss–j (2. to 4. Gm.), well diluted.

Poisoning.

Soda is a corrosive mineral poison, and its symptoms and morbid appearances are analogous to those following the use of potassa.

Tests.

Caustic soda in solution is not precipitated by bichloride of platinum, or tartaric acid; its alkaline nature can be ascertained by the usual tests. Antimoniate of potassium affords a white precipitate when added to the salts of soda. Soda tinges the outer flame of the blowpipe yellow.

Antidotes.

The same as for potassa.]

Effects and Uses.

The soda salts have none of the depressing action on the heart which we have seen to be possessed by potash.

Locally, we may use soda in *acute eczema;* or the hyposulphite in parasitic skin-disease, where it acts in virtue of the contained sulphurous acid; and the biborate, or borax, as a gargle, as a lotion in *pruritus* and various skin diseases, and as an application to aphthous ulcerations about the mouth.

A saturated solution of carbonate of soda is said to be a very soothing application in burns. [It must be applied cold, and, therefore, is not well adapted to cases where a large area is injured, but it may be applied freely in the dry form of the bicarbonate.]

Soda is not so much used internally as a remedy for gout and rheumatism, because the urate of soda is less soluble than the urate of potash; but it is one of our best remedies in those forms of *dyspepsia* with pain after food, weight at the stomach, red fissured tongue, cough, and palpitation. The hyposulphite is useful in *sarcinous vomiting.*

[The bicarbonate is a remedy of value in irritability of the bladder. It is also frequently used in combination with syrup of rhubarb in *catarrhal jaundice.*]

Sodium chloride is a good emetic; the phosphate and tartrate are purgative, but none of the preparations appear to be decidedly diuretic in their action. Sodium sulphate and phosphate have been found by Rutherford to increase the secretion of bile.

Seidlitz Powder. Pulvis Effervescens Aperiens.

℞. Potassii et sodii tart.	ʒij;	or	8		Gm.
Sodii bicarbonatis	gr. xl;	"	2	60	"
Misce, ut fiat haustus effervescens cum					
Acidi tartarici	gr. xxxv;	"	2	30	"
Aquæ	f℥iv;	"	128		"
Statim sumendus.					

[The addition of a drop of oil of lemon to the powders greatly improves their taste.

In cases of *obstinate vomiting* with constipation, broken doses of Seidlitz powders given frequently (say $\frac{1}{4}$ of each powder in an ounce of water, given, whilst effervescing, every fifteen minutes) are very useful. *Impaction of feces* may often be overcome by frequent doses of these powders.]

℞. Sodii bicarbonatis	gr. xx;	or	1	30 Gm.
Tinct. calumbæ	♏xx;	"	1	30 "
Syrupi zingiberis	fʒss;	"	2	
Infusi gentianæ compositi q. s. ad f℥j;		"	32	

Misce, ter die sumend.

Useful draught in dyspepsia.

[The following is a pleasant antacid combination, known as:—

Soda-Mint.

℞. Sodii bicarbonatis,				
Sacchari,	āā ʒij;	or	8	Gm.
Spiritus ammoniæ aromatici	♏xl	"	2	60 "
Aquæ menthæ piperitæ	q. s. ad f℥viij;	"	256	"

M. S. Dose, a tablespoonful after meals.

Used in flatulent dyspepsia. It admits of the addition of tincture of nux vomica, or syrup of rhubarb.

Compressed pills of soda-mint, for making the solution extemporaneously, may also be obtained from druggists.]

[SPIGELIA—PINKROOT.

The root of Spigelia Marilandica, U. S.

Dose, in substance, ʒj (4. Gm.).

Officinal Preparations.

Extractum Spigeliæ Fluidum. Dose, fʒj–ij (4. to 8. Gm.).

Extractum Spigeliæ et Sennæ Fluidum. Dose, fʒij–iv (8. to 16. Gm.).

Infusum Spigeliæ (℥ss to Oj). Dose, f℥iv–viij (128 to 256. Gm.); for a child, fʒij–f℥j (8. to 32. Gm.).

Spigelia is an efficient remedy against the *round worms*, or *lumbricoids*, and in moderate doses is entirely safe; but in overdoses has narcotic properties. It is given in infusion or syrup, morning and evening, for two or three days, followed by a brisk cathartic. The chief objection to the use of spigelia is, that it imparts its red color to the clothing, and, if the baby vomits after taking a dose, it is likely to cause trouble.]

[Spiritus.

List of Spirits officinal in the U. S. P.:—

Spiritus Ætheris Compositus
" " Nitrosi
" Ammoniæ
" " Aromaticus
" Anisi
" Camphoræ
" Chloroformi
" Cinnamomi
" Frumenti
" Juniperi
Spiritus Juniperi Compositus
" Lavandulæ
" " Compositus
" Limonis
" Menthæ Piperitæ
" " Viridis
" Myrciæ
" Myristicæ
" Vini Gallici.]

[SPIRITUS FRUMENTI—WHISKEY.

Spirit obtained from fermented grain by distillation, and containing from 48 to 56 per cent by volume of absolute alcohol, U. S.]

[SPIRITUS MYRCIÆ—BAY-RUM.

The spirit obtained by distilling rum with the leaves of Myrcia acris, (Schwartz), U. S.]

[SPIRITUS VINI GALLICI—BRANDY.

The spirit obtained from fermented grapes by distillation, and containing from 48 to 50 per cent., by volume, of absolute alcohol, U. S.

For effects and uses, see Alcohol.]

[STATICE—MARSH-ROSEMARY.

The root of Statice Limonium Caroliniana, U. S.

Statice is a powerful, indigenous astringent, and may be used as a substitute for kino and catechu. It has been quite popular as an application to *ulceration of the throat.* In *scarlatina*, it is used both as an *internal* and local remedy. The infusion or decoction is generally employed.]

[STILLINGIA—STILLINGIA.

The root of Stillingia salvatica, U. S.

Dose, in substance, gr. xx (1.30 Gm.).

OFFICINAL PREPARATION, U. S.

Extractum Stillingæ Fluidum. Dose, ♏xx–xl (1.30 to 2.60 Gm.).

Stillingia is highly esteemed as an alterative in *secondary syphilis, skin disease,* and *scrofula.* In large doses it is emetic and cathartic. As an alterative, it is frequently given in combination with sarsaparilla. A decoction (℥j to Oiij boiled to Oj), dose, f℥j–ij (32. to 64. Gm.); and a tincture (℥ij to Oj), dose, fʒj (4. Gm.), are largely used in the South, but are not officinal.]

STRAMONIUM—STRAMONIUM.

[**Stramonii Folium.** *The leaves of Datura stramonium, U. S.*

Stramonii Semen. *The seed of Datura stramonium, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Stramonii Foliorum. Dose, gr. $\frac{1}{4}$–$\frac{1}{2}$ (.015 to .03 Gm.).

Extractum Stramonii Seminis. Dose, the same.

Tinctura Stramonii (seeds ℥ij to Oj). Dose, ♏x–xx (.65 to 1.30 Gm.).

Unguentum Stramonii (extract, ʒj to ℥j).

ANTIDOTES.

The same as for belladonna-poisoning. *See page* 175.]

After the careful description already given of the actions and uses of belladonna, it is unnecessary to say much about stramonium. Modern investigation has shown that the active principle, daturia, is identical with atropia; and the only marked difference between the two plants seems to consist in the more decided antispasmodic properties of stramonium, which cause it to be much prized as a remedy for *asthma.* In the purely spasmodic varieties of that disease, and most efficiently when inhaled in the form of smoke, it seldom fails to give relief. [The *ointment* is used for *hæmorrhoids.*]

[STYRAX—STORAX.

A balsam prepared from the bark of Liquidambar orientale (Lamarck), U. S.

Storax has been recommended as a substitute for copaiba in the treatment of *gonorrhœa* and *gleet;* and mixed with olive oil, equal parts, is effectual in the treatment of *scabies.* It is ranked as a stimulating expectorant, but is chiefly used as an ingredient in the compound tincture of benzoin.]

[Succi.

The officinal JUICES are—

Succus Conii	Succus Taraxaci.]

SULPHUR—SULPHUR.

[**Sulphur Lotum.** *Sublimed sulphur, thoroughly washed with water, U. S.*

Sulphur Sublimatum. *Sublimed sulphur, U. S.*

OFFICINAL PREPARATIONS, U. S.

Sulphur Præcipitatum. Dose, ʒj-iij (4. to 12. Gm.).
Sulphuris Iodidum. Not used internally.
Unguentum Sulphuris (1 part sulphur, 2 parts lard).
Unguentnm Sulphuris Iodidi (gr. xxx to ℥j).
Sodii Hyposulphis. Dose, gr. xv (1. Gm.).
Sodii Sulphis. ⎫ Dose, gr. xx to ʒj).
Potassii Sulphis. ⎭ (1.30 to 4. Gm.)

Sublimed sulphur is used in making Emplastrum Ammoniaci cum Hydrargyro, Hydrargyri Sulphuretum Rubrum, Potassii Sulphuretum, Sulphur Præcipitatum, and Sulphuris Iodium.]

EXTERNAL USE.

Sulphur is used externally as a stimulant in various forms of chronic skin disease, such as *acne faciei*, and more especially in *itch*, a disease dependant on the presence of a minute insect, the acarus scabiei, the male of which ranges freely over the skin, whilst the female retires with her eggs to oblique burrows in the cuticle. These receptacles having been broken up by soap and water, sulphur ointment is carefully spread over all the patient's body at bed-time, and washed away by a warm bath next morning. Two or three applications of this sort are sufficient to cure the disease, and if the patient's skin will bear the unguentum sulphuris, one smearing with this may be sufficient. The *rationale* of the treatment is, not that sulphur acts as a direct poison to the acarus, but that it forms with lard a very tenacious and adhesive substance which suffocates the insect by blocking up its air-pores. [The sulphur ointment should generally be diluted with cerate, $\frac{1}{2}$ to $\frac{3}{4}$, as it is apt to produce too great irritation.]

Sulphur is also in great favor as a popular remedy for rheumatism, sprinkled on new flannel and applied to the painful part, and there is no doubt that some beneficial action may thus be caused. Lastly, sulphur makes a useful bath in some forms of chronic skin disease.

INTERNAL USE.

Physiological Action.	*Therapeutical Action.*
1. It has been supposed to exert a stimulating influence on the mucous membranes and skin.	1. In virtue of this, it used to be occasionally prescribed in *chronic bronchitis* and *phthisis*, and also used externally in *skin diseases.* To its action on the skin may be attributed its undoubted power of aiding,—more especially in the form of bath,—the elimination of lead and mercury from the system. Sulphur has lately been recommended as the best means of preventing mercurial salivation.

2. It causes slight increase of the peristaltic movements of the bowels.	2. It acts, therefore, as a gentle laxative, slightly softening the feces, and from the mildness of the action it is specially useful in *piles* and all irritable conditions about the rectum. Its purgative action is increased by its being dissolved and formed into a sulphide by the alkali of the bile.
3. Sulphur has well-marked antiseptic properties in consequence of its destructive power over the lower forms of vegetable life.	3. Burnt in a room with closed doors and windows, it is the best way to remove the germs of infection from the air by fumigation.

Sulphur is given off from the system principally by the bowels, but also by the milk, the sweat, and the skin, in the form of sulphuretted hydrogen, and by the urine as a sulphate.

Strong applications of sulphur frequently irritate the skin, and bring on troublesome eczema. The disadvantage of sulphur as an aperient, is the offensive odor which the sulphuretted hydrogen communicates to the feces.

The confection [Br.] is the best purgative form [containing sulphur ℥iv, and cream of tartar ℥j, in syrup of orange-peel f℥iv], in tea- or tablespoonful doses.

[The sulphites have been recommended by Polli in drachm doses for pyæmia and septicæmia, but more extended experience declares them to be worthless for this condition. The sulphite or the hyposulphite of soda is sometimes given in yeasty or sarcinous vomiting to prevent fermentation.]

[Suppositoria.

The officinal SUPPOSITORIES are—

Suppositoria Acidi Carbolici
" " Tannici
" Aloës
" Assafœtidæ
" Belladonnæ
Suppositoria Morphia
" Opii
" Plumbi
" Plumbi et Opii.]

[Syrupi.

The officinal SYRUPS are—

Syrupus Acaciæ
“ Acidi Citrici
“ Allii
“ Amygdalæ
“ Aurantii Corticis
“ “ Florum
“ Ferri Iodidi
“ Fuscus
“ Ipecacuanhæ
“ Krameriæ
“ Lactucarii
“ Limonis
Syrupus Pruni Virginianæ
“ Rhei
“ “ Aromaticus
“ Rosæ Gallicæ
“ Rubi
“ Sarsaparillæ Comp.
“ Scillæ
“ “ Compositus
“ Senegæ
“ Tolutanus
“ Zingiberis.]

TABACUM—TOBACCO.

[*The commercial dried leaves of Nicotiana Tabacum, U. S.*

OFFICINAL PREPARATIONS, U. S.

Infusum Tabaci (ʒj to Oj). Dose, fʒij (8. Gm.).

Oleum Tabaci. Not used internally.

Unguentum Tabaci. (Watery extract of leaves ℥j to ℥xvj of lard.)

Vinum Tabaci. Dose, gtt. v to xx (.30 to 1.30 Gm.).

ANTIDOTES.

Strychnia and diffusible stimulants may be regarded as physiological antidotes to tobacco; and, after thoroughly washing out the stomach, tincture of digitalis may be exhibited to counteract the depressing influence of the poison on the heart, and the tendency to collapse. Respiration should be stimulated by ammonia, frictions, and even maintained artificially. Sulphate of strychnia may be given hypodermically, and stimulating enemata injected.]

EFFECTS AND USES.

Tobacco is now rarely, if ever, used internally in medicine, on account of its poisonous properties; but it is a substance in such general domestic use, and therefore of so great physiological interest, that we must devote some little space to considering the results of modern experiment on its action.

LOCAL ACTION.

Physiological.

Tobacco is readily absorbed by the skin, and symptoms of poisoning have followed the application of strong infusions to the unbroken cuticle.

Therapeutical.

Tobacco has been used as a local application in *prurigo* and other skin diseases, but is too readily absorbed to deserve recommendation for this purpose.

INTERNAL ACTIONS.

1. *Brain and Nervous System.*—The brain seems to be little affected, but some excitement of the spine is an early symptom of the poisonous action of the drug, speedily followed, however, by muscular relaxation and paralysis, also of spinal origin.

The sensory nerves are not affected, but we find lowering of the functional activity of the motor nerves. The pupil is contracted.

[Amblyopia, caused by central scotoma of the retina, is noticed from the constant use of tobacco, and color-blindness is not uncommon in smokers. It is claimed that these effects are more apt to follow from the combined action of tobacco and alcohol.]

1. Before the introduction of chloroform, advantage was taken of the depressing and relaxing influence of tobacco on the muscular system to employ the enema in strangulated hernia and dislocations. Any occasional success, however, was amply counterbalanced by the inconveniences and even dangers which too often resulted; and this application of the drug has now fallen into well-merited oblivion.

In consequence of its lowering action on the reflex function of the spinal cord, it has been proposed as a remedy for tetanus and an antidote for strychnia, and the alkaloid NICOTIA will be found most convenient for these purposes.

The use of tobacco is believed to have some injurious effect on vision; and Hutchinson and others have recorded instances of atrophy of the optic nerve and total blindness thus produced.

2. *Circulation and Respiration.*—It is not necessary for us to go into the elaborate and contradictory series of experiments made to prove the fact that tobacco is a powerful depressant of the heart's action. The temperature usually falls in tobacco-poisoning, and death ensues from respiratory paralysis. [Excessive use of tobacco produces functional disorder of the heart, which may result in hypertrophy, dilatation, and organic disease.]	2. Tobacco-smoking has been known to give relief in asthma and chronic bronchitis.
3. *Digestive and Secreting Organs.* — Tobacco usually causes nausea and vomiting, as most smokers can testify; but toleration is soon established, and even considerable doses then fail to disturb the equanimity of the digestive organs, save a slightly purgative action on the bowels. It is stated, however, that in habitual smokers some symptoms of dyspepsia may be detected, indicated by furred tongue and loss of appetite; and there is also some generally diffused, granular irritation about the pharynx.	3. [The post-prandial cigar is thought to aid digestion by confirmed smokers, and, in some cases, increases either the peristalsis or secretions of the intestine, or both, thus acting as a laxative. Small doses of the wine of tobacco may be added to a laxative combination given at night.

[TAMARINDUS—TAMARIND.

The preserved fruit of Tamarindus Indica, U. S.

Tamarinds are laxative, and are used in making a refrigerant drink for the sick. They enter into the Confectio Sennæ.]

[TAPIOCA—TAPIOCA.

The fecula of the root of Janipha Manihot (Bot. Mag. 3071), *U. S.*

Tapioca, the starch of the Cassava plant, is used like arrowroot as an article of diet.]

TARAXACUM—DANDELION.

[*The root, gathered in the autumn, of Taraxacum Dens-leonis (De Candolle), U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Taraxaci. Dose, gr. xx–xxx (1.30 to 2. Gm.

Extractum Taraxaci Fluidum. Dose, fʒj–ij (4. to 8. Gm.).

Infusum Taraxaci (℥ij to Oj). Dose, f℥iv (128. Gm.).

Succus Taraxaci. Dose, fʒij–iv (8. to 16. Gm.).]

Taraxocum is usually prescribed as a matter of routine in sluggish liver, and the various forms of *dyspepsia* depending on a supposed deficiency of bile; but although it may have some mild tonic, diuretic, and aperient properties, there is not the slightest evidence for asserting that it exerts any real influence over the hepatic functions.

℞. Succi taraxaci	fʒj;	or	4		Gm.	
Acidi nitro-muriatici dil.	♏x;	"		65	"	
Tincturæ lupulinæ	♏xx;	"	1	30	"	
Aquæ q. s. ad	f℥j;	"	32		"	M.

S. Ter die sumend.

TEREBINTHINA—TURPENTINE.

[*The concrete oleo-resin obtained from Pinus palustris, and from other species of Pinus, U. S.*

TEREBINTHINA CANADENSIS—CANADA TURPENTINE.

The liquid oleo-resin obtained from Abies balsamea (Lindley, Flor. Med), U. S.

Enters into Ceratum Resinæ Compositum, Emplastrum Galbani Compositum (of Turpentine); and Charta Cantharidis and Collodium Flexile (of Canada Turpentine).]

[OLEUM TEREBINTHINÆ—OIL OF TURPENTINE.

The volatile oil distilled from the turpentine of Pinus palustris and of other species of Pinus, U. S.

Dose of oil of turpentine ♏ x–xx (.65 to 1.30 Gm.), given 3 or 4 times daily, in typhoid fever, or chronic dysentery; or fʒj to f℥ss (4. to 16. Gm.) as a vermifuge.

Officinal Preparation, U. S.

Linimentum Terebinthinæ. (Resin cerate ℥xij, oil of turpentine ℥viij.) Used as a counter-irritant.

Turpentine enters into Linimentum Cantharadis.]

Local Action.

Physiological.

Turpentine, when applied to the skin, causes redness, tingling, and irritation, leading on to acute inflammation and blistering, if not removed within a limited period.

Therapeutical.

This effect of turpentine causes it to be much used as a counter-irritant in those cases where we wish to relieve congestion of internal organs by driving the blood to the surface. Thus, in *peritonitis*, *pneumonia*, *bronchitis*, and *asthma*, it is frequently employed, either sprinkled on hot flannel, or in the form of the linimentum terebinthinæ of the Pharmacopœia.

Constitutional Actions.

Physiological.

1. *On the Brain.*—Turpentine produces, in large doses, giddiness, and other symptoms somewhat resembling alcoholic intoxication,

Therapeutical.

1. [Turpentine is a valuable stimulant in low fevers, where the kidneys are not diseased.]

and even ending in coma in rare instances.

2. *Circulation.*—Turpentine acts at first as a stimulant to the heart, and has undoubted astringent properties, partly, no doubt, from its coagulating influence on the albumen of the tissues, but also by causing contraction of the smaller vessels.

3. *Digestive and Secreting Organs.*—Turpentine is distinctly irritating to the alimentary canal, frequently causing vomiting and diarrhœa, and it has the property of checking mucous secretions from the various canals.

It is also a very certain diuretic of the stimulating class, but must be used with caution, as it is apt to cause frequent and painful micturition with bloody urine, and eventual suppression of the secretion [strangury], and acute inflammation of the kidneys.

2. As an astringent, turpentine is valuable in various forms of *hemorrhage*, but more especially in that from the *kidney* and in *purpura hemorrhagica* [but is now rarely used as a hæmostatic, oil of erigeron Canadense, ergot, and the mineral astringents being more reliable, and less irritating].

3. Turpentine is a valuable astringent in some forms of *diarrhœa*, and more especially that which results from the later and ulcerative stage of *enteric* or *typhoid fever*. It is highly recommended in the same disease by some authorities when abdominal pain and distension coincide with a raw, clean, dry tongue, and in ordinary tympanites it makes a good addition to a purgative enema. It has been recommended by Dr. King Chambers as an enema in *sciatica*, where it is supposed to act locally on the affected nerve, which, at one part of its course, lies directly in contact with the large intestine; and it has long enjoyed a well-deserved reputation as an anthelmintic in cases of *tape-worm*.

Turpentine has also been given in small doses to check the excessive secretion in some forms of *bronchitis*, and it may also be of service in *chronic cystitis*, *gleet*, and *pyelitis*.

It has also been used in *iritis* with alleged success, though it is difficult to see on what principle.

MODE OF ELIMINATION.

Turpentine is rapidly absorbed into the blood, and as quickly passes out, principally by the lungs and kidneys, imparting to the urine a peculiar violet odor.

[Old oil of turpentine is considered an efficient antidote against phosphorus-poisoning.]

DOSE AND MODE OF ADMINISTRATION.

℞.	Olei terebinthinæ	fʒj;	or	4	Gm.	
	Mucilaginis acaciæ	f℥v;	"	20	"	
	Misturæ amygdalæ, Aquæ laurocerasi [Br.],	āā f℥ss;	"	16	"	M.

S. fʒj pro dosi quartis horis.

A few drops of the oil may be given on a lump of sugar, in hemorrhage.

As an anthelmintic, half an ounce may be prescribed [combined with an ounce of castor oil, and is very effective against *round worms* as well as *tæniæ.*]

[TESTA—OYSTER-SHELL.

The shell of Ostrea edulis, U. S.

OFFICINAL PREPARATION, U. S.

Testa Preparata. Dose, gr. x–xl (.65 to 2.60 Gm.).]

Prepared oyster-shell, consisting of 98 per cent. of carbonate of calcium, is used in impalpable powder as an antacid in dyspepsia. [Castillon's powders consisted of sago, salep, tragacanth, each in powder, āā ʒj, prepared oyster-shell ℈j, and some cochineal as a coloring ingredient. A decoction of this powder in milk (ʒj to Oij) may be used freely as an article of diet in *bowel affections.*]

[Tincturæ.

The officinal TINCTURES are—

Tinctura Aconiti Radicis
“ Aloës
“ “ et Myrrhæ
“ Arnicæ
“ Assafœtidæ
“ Aurantii
“ Belladonnæ
“ Benzoini
“ “ Composita
“ Calumbæ
“ Cannabis
“ Cantharidis
“ Capsici
“ Cardamomi
“ “ Composita
“ Castorei
“ Catechu
“ Cinchonæ
“ “ Composita
“ Cinnamomi
“ Colchici
“ Conii
“ Cubebæ
“ Digitalis
“ Ferri Chloridi
“ Gallæ
“ Gentianæ Composita
“ Guaiaci
“ “ Ammoniata
Tinctura Hellebori
“ Humuli
“ Hyoscyami
“ Iodinii
“ “ Composita
“ Jalapæ
“ Kino
“ Krameriæ
“ Lobeliæ
“ Lupulinæ
“ Myrrhæ
“ Nucis Vomicæ
“ Opii
“ “ Acetata
“ “ Camphorata
“ “ Deodorata
“ Quassiæ
“ Rhei
“ “ et Sennæ
“ Sanguinariæ
“ Scillæ
“ Serpentariæ
“ Stramonii
“ Tolutana
“ Valerianæ
“ “ Ammoniata
“ Veratri Viridis
“ Zingiberis.]

TRAGACANTHA—TRAGACANTH.

[*A gummy exudation from Astragalus verus* (*Olivier*), *and from other species of Astragalus, U. S.*

OFFICINAL PREPARATIONS, U. S.

Mucilago Tragacanthæ, as a vehicle.

It is the basis of the officinal troches: Trochisci Acidi Tannici, Trochisci Ipecacuanhæ, Trochisci Potassii Chloratis, Trochisci Santonini, and Trochisci Zingiberis.]

Tragacanth is of service as a vehicle for the suspension and division of various powdered drugs.

[Trochisci.

The officinal LOZENGES are—

Trochisci Acidi Tannici
" Cretæ
" Cubebæ
" Ferri Subcarbonatis
" Glycyrrhizæ et Opii
" Ipecacuanhæ
" Magnesiæ

Trochisci Menthæ Piperitæ
" Morph. et Ipecacuanhæ
" Potassii Chloratis
" Santonini
" Sodii Bicarbonatis
" Zingiberis.]

ULMUS—SLIPPERY-ELM.

[*The inner bark of Ulmus fulva (Michaux), U. S.*

OFFICINAL PREPARATION, U. S.

Mucilago Ulmi. Used externally.]

Elm bark is probably tonic and astringent, but is rarely if ever used, [except as an emollient application in external inflammations, such as erysipelas].

[Unguenta.

The officinal OINTMENTS are—

Unguentum (formerly Unguentum Adipis).
" Acidi Carbolici
" Acidi Tannici
" Antimonii
" Aquæ Rosæ
" Belladonnæ
" Benzoini
" Cantharidis
" Creasoti
" Gallæ
" Hydrargyri
" " Ammoniati
" " Iodidi Rubri
" " Nitratis

Unguentum Hydrarg. Oxidi Flavi
" " " Rubri
" Iodinii
" " Compositum
" Mezerei
" Picis Liquidæ
" Plumbi Carbonatis
" " Iodidi
" Potassii Iodidi
" Stramonii
" Sulphuris
" " Iodidi
" Tabaci
" Veratriæ
" Zinci Oxidi.]

[UVA PASSA—RAISINS.

The dried fruit of Vitis Vinifera, U. S.

Raisins are laxative, and are used as a flavoring to demulcent beverages. They enter into the Tincture of Rhubarb and Senna.]

UVA URSI—BEARBERRY.

[*The leaves of Arctostaphylos Uva Ursi* (*Sprengel, Syst. II.* 287), *U. S.*

OFFICINAL PREPARATIONS, U. S.

Decoctum Uvæ Ursi (f℥j to Oj). Dose, f℥iv (128. Gm.).

Extractum Uvæ Ursi Fluidum. Dose, fʒj (4. Gm.).]

Uva ursi is astringent and possibly diuretic. [It is also tonic and antilithic, and is believed to favor uterine contraction.]

The astringency of this drug being principally directed to the genito-urinary mucous membrane, it is held by surgeons to be of some service in various chronic affections of these parts.

VALERIANA—VALERIAN.

[*The root of Valeriana officinalis, U. S.*

Dose, in substance, gr. xxx to ʒjss (2. to 6. Gm.).

OFFICINAL PREPARATIONS, U. S.

Extractum Valerianæ. Dose, gr. x–xxx (.65 to 2. Gm.).

Extractum Valerianæ Fluidum. Dose, fʒj (4. Gm.).

Infusum Valerianæ (f℥ss to Oj). Dose, f℥ij–iv (64. to 128. Gm.).

Oleum Valerianæ. Dose gtt. iv–v (.25 to .30 Gm.).

Tinctura Valerianæ (℥ij to Oj). Dose, fʒj–ij (4. to 8. Gm.).

Tinctura Valerianæ Ammoniata (℥ij to Oj). Dose, fʒj–ij (4. to 8. Gm.).

Valerianic Acid. (See page 117.)

Ammonii Valerianas.
Quiniæ Valerianas.
Zinci Valerianas.
} Dose, gr. i–ij (.06 to .12 Gm.).]

EFFECTS AND USES.

Various elaborate investigations have been made in Germany on the physiological actions of valerian, but they have not much bearing on its practical application, and the drug itself is hardly of sufficient importance to justify us in devoting much time to its consideration. We may therefore say, generally, that acceleration of the action of the heart, mental hallucinations, giddiness, and some digestive derangement are among the principal of the symptoms (described most fully by Phillips).

The more important therapeutic applications of valerian have not stood the test of time and experience, and its use is now practically restricted to *hysteria* and the various nervous conditions depending thereon. [In *nervous headache*, the ammoniated tincture is a reliable resource.]

The oil is supposed to be the active principle. It may be used with ether for inhalation, in *nervous headache.*

[The salts of valerianic acid are now generally used in the place of the preparations of valerian itself. These salts may be given in pill or in combination with simple elixir. The elixir of valerianate of ammonia is generally kept in the shops.]

[VANILLA—VANILLA.

The prepared unripe fruit of Vanilla aromatica, U. S.

Used as a flavoring ingredient in Trochisci Ferri Subcarbonatis, and Trochisci Potassii Chloratis.]

VERATRUM ALBUM—WHITE HELLEBORE.

[*The rhizome of Veratrum album, U. S.*]

White hellebore possesses some of the physiological properties of veratrum viride, but much of its energy is expended on the alimentary canal, and violent vomiting and purging often follow its use. It is, therefore, now quite discarded from medical practice. When applied to the nostrils, even greatly diluted, it causes intense sneezing.

Two alkaloids [in addition to veratria] have been discovered in the root-stalk, one of which has been called jervia, and the other veratralbia.

[For the discussion of the effects of Veratria, *see* Sabadilla, page 400.]

VERATRUM VIRIDE—AMERICAN HELLEBORE.

[*The rhizome of Veratrum viride, U. S.*

OFFICINAL PREPARATIONS, U. S.

Extractum Veratri Viridis Fluidum. Dose. gtt. j–iij (.06 to .20 Gm.).

Tinctura Veratri Viridis (℥viij to Oj). Dose, gtt. iij–viij (.20 to .50 Gm.).

(Dr. Norwood's tincture is of the same strength as the officinal tincture.)]

Some local action has been observed, of an irritant nature, somewhat resembling that of veratria.

CONSTITUTIONAL ACTIONS.

Physiological.	*Therapeutical.*
I. *Brain and Nervous System.*—1. Green hellebore has no action on the brain.	
2. *Spinal Cord.*—A very decidedly depressing effect is exerted on the spine, indicated by extreme muscular prostration.	2. [It has recently been very highly recommended in *puerperal eclampsia.*]
II. *Heart and Circulation.*—Veratrum viride is also a powerful vascular depressant, the pulse rate being lowered, and the arterial tension diminished; these effects being due both to a direct	II. Veratrum viride has been extensively used in America on account of its depressing influence on the circulation, and it is stated that we may get good results by prescribing it in the early

action of the drug on the heart muscle and to stimulation of the cardiac inhibitory nerves.

stages of *pneumonia* and other inflammatory conditions. Little or no English experience, however, has yet been brought to bear on the discussion of this question. [The late Prof. Dickson prized it very highly in *typhoid fever*, administered in large doses, even as much as forty drops being given, with the best effects.]

III. No effect is produced on the respiration, but a distinct lowering of temperature has been observed.

IV. *Digestive and Secreting Organs.*—Veratrum viride has emetic properties, and frequently causes vomiting; and purging, also, not unfrequently follows its use.

[IV. The nauseating and depressing effects are best counteracted by opium and alcoholic stimulants.]

Two alkaloids exist in veratrum viride, JERVIA and VERATROIDA, the main difference between which seems to be, that the latter is apparently responsible for the digestive disturbances which occasionally results.

[Vina.

The officinal WINES are—

Vinum Aloës
" Antimonii
" Colchici Radicis
" " Seminis
" Ergotæ
" Ipecacuanhæ

Vinum Opii
" Portense
" Rhei
" Tabaci
" Xericum.]

ZINCUM—ZINC.

[OFFICINAL PREPARATIONS, U. S.

Zinci Oxidum. Dose, gr. ij–x (.12 to .65 Gm.).
Zinci Oxidum Venale.
Unguentum Zinci Oxidi (1 to 5).

Zinci Chloridum. As a caustic and astringent.
Liquor Zinci Chloridi. (Burnett's Disinfecting Fluid.)
Zinci Acetas.
Zinci Carbonas Præcipitata.
Ceratum Zinci Carbonatis (1 to 5).
Zinci Sulphas (white vitriol). Dose, as an emetic, gr. x–xxx (.65 to 2. Gm.).
Zinci Valerianas. Dose, gr. i–ij (.06 to .12 Gm.).

ANTIDOTES.

The alkalies and alkaline carbonates are the chemical antidotes to the salts of zinc. Evacuation of the stomach and bowels should be followed by the exhibition of eggs and milk. The retching, colicky pains, and diarrhœa, may be relieved by morphia hypodermically.]

LOCAL ACTIONS.

Physiological.

Chloride of zinc is an exceedingly powerful caustic, and, in weak solution, has astringent properties. The sulphate and oxide are also astringent in varying proportions.

Therapeutical.

Chloride of zinc has been used as a caustic for the treatment of cancerous and other ulcerations, either in strong solution, substance, or arrow-shaped masses made with flour, and inserted into incisions around the base of the morbid mass. It has turned out to be the principal ingredient in all so-called cancer curers' nostrums, and is employed in legitimate surgery as an application to wounds from which *cancerous growths* have been removed, and also (in the strength of gr. lx ad f℥j) to the raw surface after ordinary operations, with the view of preventing pyæmia.

Sulphate of zinc is a much-valued astringent lotion in *conjunctivitis*, and makes an excellent injection in *gonorrhœa* and *leucorrhœa;* and the oxide, either in powder or ointment, is one of the most useful applications in chronic skin disease. [The acetate is used for the same purposes as the sulphate (gr. $\frac{1}{4}$ to $\frac{1}{2}$ in rose-water ℥j).]

INTERNAL ACTIONS AND USES.

Physiological.	*Therapeutical.*
1. *Action on Nervous System.*—This is probably tonic in character, and some astringent properties may also be noted.	1. We can thus explain the benefit which sometimes results from the use of sulphate of zinc in *chorea.* We here begin with a grain and continue in gradually increasing doses up to 6 or 8 grains, tolerance being rapidly established, and the emetic action of the drug avoided. Oxide of zinc, in doses of from 1 to 5 grains, is an excellent remedy in the *night-sweats* of phthisis, and it is also a valuable aid to treatment in the *diarrhœa* of children.
2. *On Digestive System.*—Sulphate of zinc promptly and effectually empties the stomach, without causing much depression or nausea.	2. It is therefore our most reliable direct emetic, invaluable in cases of poisoning, in doses of from 20 to 30 grains.

℞. Zinci sulphatis	gr. xxx ;	or	2	Gm.	
Aquæ	f℥iij ;	"	256	"	M.

Fiat haustus emeticus statim sumendus.

℞. Zinci chloridi	gr. j ;	or		06 Gm.	
Aquæ rosæ	f℥iv ;	"	128	"	M.

A good injection in gonorrhœa.

℞. Zinci oxidi	ʒij;	or	8	Gm.	
Glycerinæ	fʒij;	"	8	"	
Liquor plumbi subacetatis	fʒiss;	"	6	"	
Aquæ calcis q. s. ad	f℥vj.	"	192	"	M.

Fiat lotio.

Useful in impetigo.

℞. Zinci Valerianatis	gr. xxiv;	or	150	Gm.
Confectionis rosæ	q. s.			

Fiat massa in pilulas duodecim dividenda. Deaurentur pilulæ.

Nervine tonic.

ZINGIBER—GINGER.

[*The rhizome of Zingiber officinale* (*Roscoe, Trans. Linn. Soc.*), *U. S.*

Dose, in substance, gr. x–xv (.65 to 1. Gm.).

OFFICINAL PREPARATIONS, U. S.

Extractum Zingiberis Fluidum. Dose, ♏x–xx (.65 to 1.30 Gm.)

Infusum Zingiberis (℥ss to Oj). Dose, f℥ij–iv (64. to 128. Gm.).

Oleo-resina Zingiberis. Dose, ♏ss–ij (.03 to .12 Gm.).

Syrupus Zingiberis. As a vehicle.

Tinctura Zingiberis (℥iv to Oj). Dose, fʒss–j (2. to 4. Gm.).

Trochisci Zingiberis (each containing ♏ij of the tincture).

Also enters into Acidum Sulphuricum Aromaticum, Pilulæ Scillæ Compositæ, Pulvis Aromaticus, Pulvis Rhei Compositus, and Vinum Aloes.]

Ginger is an agreeable stimulant and carminative.

Having now completed the study of the various articles contained in the national Pharmacopœia, we shall proceed to give a brief *résumé* of the properties of the most useful among those drugs which have not yet received full official sanction. Among these will be found some very important remedies, also plants of great physiological interest, whose active medicinal powers have not yet been fully tested in practical medicine, and whose investigation opens up a valuable field for clinical observation.

REMEDIES IN FREQUENT USE, BUT NOT INCLUDED IN THE PRIMARY LIST OF THE MATERIA MEDICA, U. S. P.

[ACIDUM BORACICUM—BORACIC ACID.

Boracic acid may be obtained by the decomposition ot borax by sulphuric acid. It occurs in white, shining, scaly crystals, with no smell, and a feeble acid taste. Dissolved in alcohol, it imparts a characteristic green tinge to its flame; it is soluble, also, though to a less extent, in water (20 parts cold, or in 3 of hot). Borax, but to a higher degree, boracic acid, has decided antiseptic power, arresting fermentation and putrefaction by destroying the organic ferments upon which their processes depend.] This is an excellent antiseptic application to superficial granulating surfaces, used as a lotion, 40 per cent. saturating water, or as boracic lint, made by soaking lint in a hot 30 per cent. solution, and allowing it to dry, or an ointment: Boracic acid and white wax, 20 parts each; almond oil and paraffine, 20 parts each. Glycerine is also an excellent solvent. Free application of the saturated solution is the best remedy for the fetid perspiration of the feet which often causes so much annoyance. [In the *aphthous sore-mouth* of children, in which it acts in a similar manner, borax and sugar has long been a favorite remedy; and a solution of borax forms a common wash for use in disorders of the hairy scalp, and in scaly eruptions. In pruritus, tinea circinata, pityriasis versicolor, etc., boracic acid solutions are of much service.

Boracic acid, finely levigated, has been used of late years with great success, insufflated into the auditory canal, in cases of chronic suppurative discharges from the ear. It appears to be perfectly free from irritation, and quickly reduces the offensive character of the discharge as well as its quantity. Boracic acid has also been used in general surgery as a dressing for wounds, and Mr. Lister employs it to a considerable extent in his system of dressings.

Boracic acid and borax have been used in lozenges for public speakers in order to prevent *hoarseness*, but are seldom employed internally in any other form, although the latter has been highly recommended in the uric acid diathesis in doses of thirty or forty grains.]

ACIDUM SALICYLICUM—SALICYLIC ACID.

[**Sodii Salicylas.** Dose, gr. xx to ʒj (1.30 to 4. Gm.)
Ammonii Salicylas. Dose, the same.
Cinchonidiæ Salicylas.
Chinolin Salicylas.[1]]

LOCAL ACTIONS.

Physiological.	*Therapeutical.*
Salicylic acid is an excellent antiseptic, delaying putrefaction and preventing decomposition.	Being less irritant than carbolic acid, it has been proposed as a substitute for that substance in carrying out Lister's antiseptic system. It has also been recommended as a good lotion to raw surfaces; but Callender has shown that it not only tends to irritate the wounds, but frequently brings out a crop of irritable vesicles in their neighborhood. [It has been used as an application in diphtheritic croup, in powder or solution.]

CONSTITUTIONAL ACTION.

Salicylic acid is an antiseptic and antipyretic, rapidly reducing temperature in fever-	Salicylic acid is now universally allowed to be a most efficient remedy in *acute*

---

[1] See page 237 for Chinolin.

ish conditions, although, in a state of health, the drug seems to be without influence on the body heat. Some headache, giddiness, and ringing in the ears have been observed, but the cardiac and respiratory functions are not sensibly affected.

In poisonous doses, slowing of the breathing and convulsive attacks, from diminution of the excitability of the vagus, have been observed. Nausea, burning in the throat, vomiting, and stomach irritation have occasionally been noticed to follow the use of the acid; and albuminuria with almost total suppression of urine, and occasionally hæmaturia are more rarely noted among its effects; the most usual action, however, on the kidneys being diuretic, with slight increase of urea and uric acid.

rheumatism, very rapidly reducing temperature, relieving pain, and, in fact, cutting short the disease. By shortening the duration of the joint inflammation, it naturally limits the tendency to cardiac complications; but it seems to have no power of directly reducing the liability to this accident, nor influence over developed pericarditis, or in averting or arresting conditions of hyperpyrexia. In an ordinary case of acute articular rheumatism, we may count upon cutting short the disease in two or three days, the pain going first and then the fever. It is well to continue the drug for 10 or 15 days after the apparent cure, in order to prevent relapses, and the anæmia so often following other modes of treatment is not met with under this. It is of less service in chronic rheumatism or gout, it is useless in ague, and although in typhoid fever the temperature may go down, no influence is exerted on the duration of the disease.

MODE OF ELIMINATION.

Elimination is effected by the urine, beginning in 10 minutes and being completed in from 24 to 48 hours, and the acid seizing glycocol from the liver and other organs becomes converted into salicyluric acid, thus resembling the conversion of benzoic into hippuric acid. Probably a little is also given off by the sweat and saliva. The soda salt is rapidly transformed into the original acid by the carbonic acid of the blood.

Dose and Mode of Administration.

We may give salicylic acid in 20-grain doses, repeated hourly for six hours on two successive days and continued at shorter intervals if the disease resists 48 hours' medication. As much as 280 grains have been given without injury within 12 hours, but it is always well to avoid very large doses, which are very apt to cause irritation and discomfort.

Salicylic acid, being irritating and very insoluble, has been now almost entirely displaced by the salicylate of soda, which is freely miscible with water and is readily absorbed; the dose being gr. xx to ʒj (1.30 to 4. Gm.), being generally administered in the smaller dose every hour until a drachm has been given daily.

Dangers from Salicylic Acid.

[Several instances have occurred in which this agent has unexpectedly produced disagreeable consequences. Dr. Watelet communicated a paper to a late number of the *Bull. de Therapie* on this subject, in which the details are given of two cases of rheumatism treated by salicylate of soda, one of which was followed by gangrene of the lower extremities, and both by cystitis, obstinate constipation, and coldness of the extremities.[1]

Salicylic acid has a strong affinity for lime, and it is thought that its administration, if long continued, may injuriously affect the bones and the teeth. Whether this technical objection also exists against it when given in combination with alkalies, is not clear, but in this form it is certainly safer, and these salts are now generally used in preference to the acid itself.]

Since these alkaline salts have come into general use, we have heard much less of the uncomfortable effects occasionally caused by the acid, and some of which, at all events, were due to impure preparations containing carbolic or cresylic acid. But, in addition to the peculiarities mentioned above, careful observers have described urticaria and irritable erythematous and vesicular, cutaneous affections and sore throat, with a species of quiet delirium and feverish symptoms, and we are specially warned to beware of its use

Dublin Press and Circular.

in kidney disease. As a general rule, however, the soda salt may be freely prescribed without the anticipation of any of these undesirable results.

Salicylic acid is very insoluble, and it is difficult to find a ready medium for its administration. Messrs. Savory and Moore have devised a very elegant granular, effervescing preparation, or we may use the salicylate of sodium or ammonium. The following are good formulæ :—

℞.	Acidi salicylici	ʒj ;	or	4	Gm.	
	Olei amygdalæ expressi	fʒv ;	"	20	"	
	Pulv. acaciæ	ʒijss ;	"	10	"	
	Syrupi amydalæ	fʒvj ;	"	24	"	
	Aquæ aurantii flores	q. s. ad f℥iij ;	"	96	"	M.

S. Capiat fʒj pro dosi.

For children.

Or,

℞.	Acidi salicylici	ʒj ;	or	4	Gm.
	Sp. rect.	fʒijss ;	"	10	"

Dissolve.

Potassii citratis	fʒj ;	or	4	"
Syrupi aurantii	fʒij ;	"	8	"
Aquæ	fʒiijss ;	"	10	"

S. Mix the two solutions and filter, and then dilute with water to taste.

[The following is used by Da Costa quite extensively in *acute rheumatism :—*

℞.	Sodii salicylatis	gr. xx ;	or	1	30	Gm.	
	Glycerinæ	♏xv ;	"	1		"	
	Spt. lavandulæ comp.	♏vijss ;	"		50	"	
	Aquæ	q. s. ad ℥ss ;	"	16		"	M.

Fiat haustus quartis horis sumendus.]

AMYL NITRIS—NITRITE OF AMYL.

[Dose by inhalation, gtt. iij–v (.20 to .30 Gm.).]

LOCAL ACTION.

Nitrite of amyl is not possessed of any local irritant or sedative properties.

INTERNAL ACTIONS.

Physiological.	*Therapeutical.*
I. *Nervous System.* — 1. *On Brain.*—No special effect is produced on this organ beyond that resulting from dilatation of the cerebral vessels, and consisting of a sensation of fulness and oppression in the head. Ophthalmoscopic examination has proved the retina to be deeply congested during the inhalation of nitrite of amyl. Epileptics are observed to be unusually susceptible to its action. Crichton Browne has observed yawning and other movements suggesting a specific action on the motor centres of the mouth.	**I.—1. It has been recommended as a remedy for *epilepsy*, in virtue of its dilating powers releasing the vessels of the brain from that condition of partial spasm which is said to be the cause of the disease. When given during the fit, it fails; but in the hands of Crichton Browne, confirmed by Weir Mitchell and others, it has been successful when given before the paroxysm, when a distinct *aura* is felt and pallor of the face observed. It is also of great service in that perilous condition known as the status epilepticus.**
2. *On Spinal Cord.*—A distinct lowering of reflex irritability has been observed.	2. It has been theoretically recommended in cases of ***tetanus*** and ***strychnia-poisoning***, and in ***neuralgia*** its inhalation has apparently been followed by relief.
II. *Vascular System.*—1. *On Heart.*—After a brief inhalation of this drug, the action of the heart becomes excessively rapid, the face flushes, and a violent throbbing in all the arteries is experienced, with well-marked giddiness; and if its administration is pushed up to poisonous limits, there is much weakening of the cardiac pulsations.	II.—1. The nitrite of amyl has been proposed as an antidote in *chloroform-poisoning*, and as a remedy for the peculiar heats and flushes met with in women about the menopause.

2. The effect on the arterial system is one of marked dilatation, the vessels enlarging, as proved not only by general flushing, but by congestion of the retina, and by the free flow of blood from cupped surfaces which had previously yielded only a few drops. The arterial tension becomes much lowered, and this enlargement of the calibre of the vessels has been proved to depend on a direct action of the drug on the muscular coats of the arteries, and not on any intervention of the vaso-motor system.

It has also been proved that oxidation is diminished, that the hæmoglobin of the blood is checked in its function of absorbing and giving up oxygen, and that, previous to death, the color of the arterial and venous blood becomes almost precisely alike.

2. In consequence of this dilating effect on the vessels, amyl has been most successfully used in *angina pectoris.* The essential condition here is supposed to be one of spasmodic contraction of the smaller pulmonary and systemic vessels, against which the heart, generally weakened, as it is in this disease, by mal-nutrition of its muscular structures, finds itself unable to cope, and hence the agonizing distress. Inhalation of the drug releases the spasm, and so gives ease; and this result follows whether there be actual valvular disease or not.

This explanation of Brunton, who had the merit of first using the drug, has been disputed of late, Dr. George Johnson holding that the rise of arterial tension in angina pectoris is not the primary cause of that agony, but is merely a secondary reflex result, and that the remedy acts purely in virtue of its anti-neuralgic virtues, seeing that curative powers are equally manifested when face flushing already exists.

Brunton's views, however, would seem most in accordance with the facts observed, but, whichever side is right, there can be no doubt about the accuracy of the evidence brought forward in favor of

III. *On Respiration and Temperature.*—During the early stage of amyl inhalation the respiration is hurried, but when the administration is further pushed the breathing becomes slower, and finally extinguished, from the arrest of the corpuscular function noted above, and from a paralyzing effect on the respiratory nervous centre. The temperature tends to fall, from the diminution in the process of oxidation.

IV. *On the Digestive System.*—The presence of sugar in the urine has been observed during amyl inhalation, this being probably due to dilatation of the hepatic vessels.

the clinical superiority of this over any other treatment.

III. Amyl has been successfully used during the paroxysm of *spasmodic asthma*, acting, no doubt, by relaxing the muscular walls of the bronchial tubes, and it has also been recommended as an efficient remedy for whooping-cough, but my own experience does not bear this out.

IV. Amyl has been theoretically recommended in *cholera*, but there is no special evidence in its favor.

Amyl is now known to act more speedily and effectually when inhaled than when taken by the mouth, and from 2 to 5 drops placed on a handkerchief are cautiously drawn into the lungs until the characteristic flushing is produced.

No special accidents are recorded as having arisen from its use; but the caution seems a reasonable one, not to recommend it rashly to old persons with brittle or calcareous arteries, as the sudden alteration of calibre might be attended with danger. Possibly also it might be advisable not to recommend it to very plethoric patients, whose brains are already fully filled with blood. As it keeps badly, we must be very careful to procure it quite fresh, and not expose it to sunlight.

Anæmic patients seem to be specially tolerant of its use.

(For **Nitro-Glycerine,** see page 464.)

ARECA—[BETEL NUT, PH. B]

This nut possesses some astringent properties, and has been used with success as an anthelmintic.

[AURUM—GOLD.

PREPARATIONS.

Auri Chloridum. Dose, gr. $\frac{1}{40}$–$\frac{1}{10}$, (.0015–006 Gm.)
Auri et Sodii Chloridum gr. $\frac{1}{20}$–$\frac{1}{5}$, (.003–.015 Gm.)

POISONOUS EFFECTS.

The effects of the chloride of gold resemble those of the corrosive chloride of mercury; in overdoses corrosive poisoning is produced; the symptoms closely assimilating those of the mercurial, call for the same remedial measures.

Physiological Effects.	*Therapeutical.*
Digestive Tract.—In overdoses gastro-enteritis is set up; in minute continued doses, the gold salts act as stimulants to the glandular structures of the stomach and liver.	In dyspepsia, gold is useful in the same class of cases as are benefited by the nitrate of silver. In the early stages of cirrhosis of the liver the chloride of gold and sodium is one of the most efficient remedies we possess. (Bartholow.)
Circulation.—Like mercury, the chloride of gold reduces the oxydizing power of the red blood cells, and increases tissue waste. In small doses it stimulates the functions of nutrition, and increases assimilation.	In fibroid disease of other organs, such as the kidney, it is useful, especially in that form of Bright's disease characterized by a large amount of pale urine, containing but a small amount of albumen.
Nervous System.—In small doses the mental functions are quickened (Bartholow), but upon the spinal cord especially are its effects seen to be those of a decided stimulant.	In premature senility or decay of the mental powers, gold may be cautiously used with benefit; also in the different forms of sclerosis of the spinal cord in its early stages.

Sexual System.—The genital organs are stimulated through an action upon the spinal cord.

In the treatment of *defective menstruation*, and similar disorders dependent upon want of sufficient innervation, the gold salts have gained some reputation.]

[AZEDARACH—AZEDARACH.

The bark of the root of Melia Azedarach, U S. Secondary.

The bead tree, or Pride of China, is largely used in the Southern States as an *anthelmintic*, resembling spigelia in its effects. The decoction (℥ij to Oij boiled to Oj) is generally employed; the dose to a child being a tablespoonful frequently repeated, until it purges].

BELÆ FRUCTUS—INDIAN BAEL [PH. B.]

Indian bael, containing tannin, has astringent properties, and has been highly praised as an effectual cure for the more chronic forms of *dysentery*. Only partial confirmation is given by home experience to the evidence furnished from abroad; but this may be explained not only by the limited opportunities of testing its efficacy in this country, but because the drug is probably much more active when used in a perfectly fresh state.

BRAYERA—KOUSSO.

[*The flowers and unripe fruit of Brayera anthelmintica, U. S. Secondary.*]

EFFECTS.

Physiological.

The action of kousso is poisonous to the tape-worm, without exerting any irritating or purgative effect. ["Of all the remedies for tape-worm none is more efficient or certain." (Stillé.)]

Therapeutical.

It is therefore occasionally used as an anthelmintic, and with moderately good effect when given on an empty stomach, according to the rules generally laid down.

MODE OF ADMINISTRATION, ETC.

It is well not to use the officinal tincture [Br.], but to get the fresh flowers, boiling about half an ounce in three or four ounces of water, adding a little lemon-peel, and directing the patient to swallow the whole draught, dregs and all. A little vomiting sometimes follows, but is seldom troublesome. [A brisk cathartic should follow in three or four hours.]

BROMIDE OF ETHYL.

(*Hydrobromic Ether.*)

ETHIDENE DICHLORIDE.

(*Ethylidene Chloride, Chloride of Ethyl.*)

Ethyl bromide has been much praised as an anæsthetic, because it is said not to depress the respiration and circulation, or to cause vomiting, but several deaths have occurred, and it is therefore probably an unsafe agent.

[If pure bromide of ethyl be used, and ordinary care be exercised in administering it, the bromide of ethyl is, as regards safety, somewhere between chloroform and ether. Dr. Levis has used it in many operations without any accident. It is pleasant, efficient, and requires such a small amount as to make it scarcely more expensive than ether.]

Ethidene dichloride has been used as an anæsthetic by Clover in 1877 cases with one death. He prefers to make the patient nearly unconscious by nitrous oxide gas, and then add the vapor of ethidene, the resulting sleep being quiet and rapidly produced, stertor with dilatation of pupils showing when enough has been given. Vomiting is neither so frequent nor distressing as when chloroform has been given, but there is a tendency to cardiac depression.

The Glasgow committee of the British Medical Association report that, like chloroform, it reduces the blood pressure, but in less degree and in regular gradations, without the unexpected and apparently capricious depression sometimes caused by the latter drug. It is therefore (theoretically at least) much safer.

CASCA BARK.

The bark of Erythrophlœum Guineense, generally called Casca, Cassa, or Sassy bark.[1]

This is the ordeal bark of Angola. If the victim vomits he is acquitted, if it causes purging he is put to death. In an examination into its physiological action by T. Lauder Brunton, M.D., F.R.S., and Walter Pye, Esq., fifty-four experiments were tried on various animals, and it was found to uniformly cause vomiting, weakness, and finally death during a convulsion.

The purgation is probably due to a local action, as it never follows subcutaneous injection. The intestinal secretion is not increased; respiration is accelerated from stimulation of pulmonary branches of vagus, and not from action on respiratory centre. On the circulation a primary slowing is caused from stimulation of the vagi, as it ceases after section of these nerves; and, a secondary quickening, by paralysis of the ends of the vagus in the heart, thus resembling the action of digitalis. The arterioles contract [either directly or] from nervous action, the blood-pressure rises, and the secretion of urine is increased.

Powdered casca is a sternutatory,

Chinolin. (See page 237.)

[COCCULUS INDICUS.—FISH-BERRIES.

The fruit of Anamirta Cocculus (Wight and Arn).

Picrotoxin (not an alkaloid, supposed by Bouillay to be an *acid*, and named by him Picrotoxic acid). Dose, gr. $\frac{1}{64}$ (.001 Gm.).

The active principles are (in the pericarp) menispermia, and paramenispermia, hypo-picrotoxic acid, resin, fat, and gum, and (in the seed) picrotoxin and anamirtin, or cocculin.

TREATMENT OF POISONING.

Empty stomach, bowels, and bladder, and give stimulants, ammonia or ether by inhalation; and administer bromide of potassium.]

---

[1] See Phil. Trans. of Royal Soc., vol. 107, part 2, rev. ed., 1870.

Physiological Effects.	*Therapeutical Effects.*
Cocculus indicus is poisonous to lower forms of animal and vegetable life.	A solution or ointment of cocculus indicus is used to destroy lice. It is fraudulently added to malt liquors to stop fermentation, and increase the bitter taste.
In man gastro-intestinal irritation, congestion of brain, strabismus, vomiting, collapse, and great depression of the functions of the spinal cord. Picrotoxin differs from strychnia in producing alternate clonic and tonic convulsions, but does not exalt the functions of the spinal cord as strychnia does.	It is applicable to states of the stomach characterized by depression, and in paralytic conditions of the bowel; and to certain cases of epilepsy, in which there is anemia and feebleness. In paralysis it is less useful than strychnia. In chorea, in tremors of alcoholism, and similar nervous functional disorders, picrotoxin may be efficient. Murrell and Da Costa recommend it also in the treatment of night-sweats.
It is asserted that, in medicinal doses, picrotoxin acts like a bitter upon the stomach. Upon the spinal cord it acts like the combination of strychnia with belladonna. It also affects the cerebral functions, producing stupefaction and delirium; in dogs convulsions are produced.	As it has a special effect upon the alimentary tract, cocculus indicus may be used as a bitter tonic in cases of constipation due to torpor of the intestinal walls and in certain cases of indigestion.

[CURARE—WOORARA.

South American arrow-poison.

Dose, gr. $\frac{1}{10}$ (.006 Gm.).

This is a watery extract of several plants, prominent among which are two belonging to the species of *strychnos* and *cocculus* (probably *Strychnos Castelnæ*, Wed., and *Cocculus toxiferus*, Wed.), and a variety of pepper. It has the consistence of thick paste, becoming brittle on drying; is blackish-brown in color, and has a bitter taste. It is probable that its composition varies in different localities.

LOCAL EFFECTS.

Physiological.	*Therapeutical.*
Curare is an irritant to denuded surfaces, causing pain and inflammation.	It is only applied to wounds for its constitutional influence.

CONSTITUTIONAL EFFECTS.

1. *Nervous System.*—The mind remains clear. The inferior extremities are first and chiefly affected. "It seems probable, however, that the primary operation of woorara is upon the terminations of the nerves, and not on their central origin." (Stillé.)[1]	1. In epilepsy and chorea, curare has been tried and found to be useless.
2. *Muscular System.*—When injected into the blood, or hypodermically, curare causes general muscular paralysis, first affecting the inferior extremities, but ultimately involves all the muscles, including those of respiration. A large dose causes death by paralysis of respiration and asphyxia, but the heart continues beating after the breathing ceases, and animals may be restored by artificial respiration. It is apt to cause ptosis in man, and mydriasis and diplopia may occur.	2. This agent has been employed in almost all forms of muscular spasm, but it is in *tetanus* that it has achieved its best results. It is certain that it reduces the muscular contractions and saves the patient from the consequent exhaustion. It is reported to have cured 13 out of 33 cases of *tetanus*, and deserves further trial. In *hydrophobia* it also exerts a good effect by relieving the violence of the convulsions and reducing their frequency. In three cases it has been thought to have cured patients afflicted with *rabies canina.*

---

[1] The National Dispensatory, Philadelphia, 1879, p. 482.

3. *Upon Secretion.*—When taken by the mouth, curare is eliminated by the secretions nearly as rapidly as absorbed, so that it is almost innocuous in this way, simply acting as a diuretic and diaphoretic.	3. As it is believed that if any abrasion or ulcer exist in the stomach the drug may exhibit its toxic effects, its internal use is not considered advisable in any considerable dose.

ADMINISTRATION, DOSE, ETC.

Curare is best exhibited hypodermically, in order to insure exactness of administration. A solution in distilled water (one part in one hundred) is the most available form, but it should be freshly prepared. Ten minims of this solution would be the ordinary dose, to be carefully repeated until its characteristic effects on the muscular system are observed.

What has been termed the sulphate of curarin has been used in doses of one-tenth that of the extract.]

CURCUMA—TURMERIC.

[*The rhizome of Curcuma longa, U. S. Secondary.*]

Turmeric is not used in medicine. It forms the coloring ingredient in curries, and the theory has recently been broached that the yellowish tint so often observed on the skin of Anglo-Indians results from the absorption of the pigment of this substance. [Bibulous paper saturated with the tincture and dried, is used as a test for alkalies, which turn it brownish-red.]

DUBOISIA.

It causes dryness of the throat, dilatation of pupil, with dimness of vision, cephalalgia, vertigo, and drowsiness. The pulse and respiration are quickened, and a reddish eruption sometimes breaks out on the skin. It may be topically applied to dilate the pupil in place of atropia, or by subcutaneous injection, in dose of 1 milligram, to check exhaustive sweating.

ETHYLATE OF SODIUM.

The application of this substance by a camel-hair brush is said by Richardson to be rapidly curative of nævus, lupus, warts, etc., and, in the form of spray, of ozæna and nasal-polypus.

EUCALYPTUS GLOBULUS [PH. B.].

Blue Gum-Tree of Tasmania.

Oleum Eucalypti Foliorum (Volatile oil of Eucalyptus leaves). Dose, ♏ ij–x. [.12 to .65 Gm.]

Eucalyptus is an excellent antiseptic, proving rapidly destructive to infusoria, and being free from the toxic and locally irritant effects of carbolic acid, it is not improbable that it may at some future time partially supersede that drug. [It may, therefore, prove useful in *sarcinous vomiting.* The tincture and infusion have both been used as applications to foul ulcers.]

It paralyzes the spinal cord and medulla, a period of preliminary excitement rapidly giving way to profound muscular weakness, loss of reflex activity, and finally death from respiratory failure.

The pulse loses in force, the temperature is lowered, and the excretion of urea is increased.

As regards the therapeutics of the drug, it appears to have been used with success as an antiperiodic. There seems to be no doubt that the presence of the tree in large numbers deprives malarious districts of much of their virulence.

It has also been recommended in *bronchitis* and *asthma,* and acts well by inhalation in various pulmonary diseases.

Dose of the tincture, fʒss to fʒij. Lister says that its use as an antiseptic is aided by dammar varnish which holds the oil most readily in combination, and prevents its too rapid evaporation. [The fluid extract may also be used, but the oil is the best preparation.]

FARINA TRITICI—WHEAT FLOUR.

Flour is only of dietetic importance. Bread-crumb (Mica panis) is used as a vehicle for pills.

FEL BOVINUM PURIFICATUM—PURIFIED OX-BILE [PH. B.].

Bile is well known to act as a laxative, to aid the digestion of the fatty and amylaceous constituents of our diet, and to prevent the decomposition of food within the intestines, with consequent flatus and digestive disturbance.

It has, therefore, been supposed that when a deficiency of bile is suspected, we may hope to derive advantage from ox-gall administered in gelatine capsules, so that its action may be deferred until it reaches the small intestines. In some forms of *dyspepsia* and in *chronic diarrhœa* it is said to be a useful remedy, but little clinical evidence on this point can be adduced.

FUCHSINE.

Fuchsine in doses of gr. 1½ to gr. 3, thrice a day, has been found beneficial in chronic albuminuria with œdema.

[A weak solution confined between two glasses and placed in a spectacle frame, is said to improve certain cases of *color blindness* where the defect is physical rather than physiological.]

GOA POWDER—[ARAROBA].

Has been extensively used in the East, recommended by Sir Joseph Fayrer in cases of *ringworm* and *psoriasis.* We may dissolve a scruple in an ounce of hot lard to make an ointment.

Prof. Attwood having discovered that chrysophanic acid is the principal ingredient of Goa powder, Mr. Balmanno Squire has proved the efficacy of this substance in the same class of cases, making an ointment also with hot lard (in the proportion of gr. xv to xxx to the ounce).

There is no doubt as I have amply verified by my own experience, that chrysophanic acid, although not the infallible specific it was originally supposed to be, is a very useful remedy in psoriasis, and the various forms of ringworm. Its drawbacks are—

1st. The irritation it often excites. This may either be in the form of a papular eruption, or of an inflammatory condition closely allied to erysipelas, frequently spreading over the head and face, and attended by most distressing tingling and itching.

2d. The peculiar purplish discoloration of the skin which it causes, and which is only removed by the free desquamation of the cuticle which invariably follows.

3d. The way in which it stains linen, the discoloration, however, disappearing after the use of bleaching-powder.

Mr. Ashburton Thompson[1] has pointed out that chrysophanic acid is an emetic purge of great efficiency, acting rapidly, and without much depression.

INGLUVIN.

Ingluvin is said to be useful in atonic dyspepsia, ten grains of the powder being sprinkled on bread, and taken after meals. It has also been recommended in the vomiting of pregnancy.

JABORANDI.

[Dose of the drug, gr. x to ʒj (.65 to 4. Gm.).]

PREPARATIONS (NOT OFFICINAL).

Pilocarpia,
Pilocarpia Murias, } gr. $\frac{1}{6}$ to $\frac{1}{2}$ (.01 to .03 Gm).

Elixir Jaborandis (gr. x to ʒj). Dose ʒj to iv (or 4. to 16. Gm.).

Extractum Jaborandis fluidum. Dose ♏ x–xxx (.65 to 2. Gm.).

CONSTITUTIONAL ACTION.

Physiological.

Within ten or twelve minutes after jaborandi has been taken, the face flushes deeply, and profuse perspiration follows, accompanied by a great

Therapeutical.

The powerful diaphoretic action of jaborandi, no less than its power in aiding the elimination of urea, would seem to suggest its use in vaincrease of salivary secretion, terminating in from two to four hours. The loss of fluid thus produced is very considerable, and the sweat has been proved to contain a large excess of urea. This action on the skin is considered due to vaso-motor paralysis and consequent dilatation of the cutaneous arterioles, and the sialagogue effects of the drug are attributed to stimulation of the periphery of the nerves supplied to the salivary glands. Jaborandi increases somewhat the action of the heart; and contraction of the pupil, with impaired accommodative power, has been noted to attend its use.

---

[1] British Medical Journal, May, 1877.

A good deal of nausea, depression, and general discomfort result, and have been graphically described by Mr. Martindale in the "Lancet."

Atropia and muscarine appear to be in many respects an exact physiological antidote to jaborandi.

rious chronic *kidney-diseases* [Bright's disease], as well as febrile conditions. But its action is too short, sharp, and sudden, and too much depression and inconvenience are produced, to render us very hopeful of its ultimate success in practice. [Except in *uræmia*, where pilocarpia may be given hypodermically.]

It has been prescribed in *diabetes insipidus*, and fop the purpose of augmenting the secretion of milk.

[The alkaloid of Jaborandi, possessing both the diaphoretic and sialagogue properties of the drug, has received the name of—

Pilocarpia—Pilocarpin.

CONSTITUTIONAL EFFECTS.

Physiological Effects.

Dr. Popow (*St. Petersb. Med. Woch.*, August 4), reporting upon the results derived from the hypodermic injection of pilocarpin in men

Therapeutic Uses.

From some comparative trials which he has made with the internal administration of pilocarpin, Dr. Curschmann believes that the infrein health and suffering from fever, and in experiments upon animals made in Prof. Suschtschinsky's laboratory, comes to the following conclusions:—

1. Pilocarpin produces the same effect as an infusion of the leaves of jaborandi.

2. An injection of from gr. $\frac{1}{6}$ to $\frac{1}{3}$ (.01 to .02 Gm.) induces abundant sweating, without causing the unpleasant effects (giddiness, vomiting, cephalalgia) produced by jaborandi, and is, therefore, better suited for therapeutical employment.

3. The temperature diminishes without any prior exaltation, from one hour and a half to four hours, and reaches its minimum soon after the cessation of the sweating.

4. The increased excretion of saliva is observed alike in the healthy and the sick, after doses of from gr. $\frac{1}{6}$ to $\frac{1}{4}$ (.01 to .015 Gm.). Sweating only occurs in such doses in the healthy; fever patients, *e. g.*, typhus, requiring gr. $\frac{1}{3}$ (.02 Gm.).

5. The quickening of the heart's action produced by the pilocarpin continues a pretty long time after small doses, but when large ones are employed, this is soon replaced by retardation.

6. On the direct introduction of pilocarpin into the quency with which it causes vomiting, as compared with jaborandi, is principally due to its being used hypodermically, and thereby avoiding direct irritation of the stomach. Some persons, especially those who have been weakened by prior disease, complain of a sense of debility, but this usually soon passes off; but in others a complete state of collapse is produced, which may or may not be connected with prior vomiting. The possibility of this occurrence must always be borne in mind. It is dependent upon the amount of the dose and the susceptibility of the individual. It is oftenest met with in women, and in those whose strength has been greatly reduced; and when the patient's constitution is not known, the first dose of the medicine should not exceed gr. $\frac{1}{3}$ (.02 Gm.), while its effect should be watched for a quarter or half an hour. As far as the trials have gone, pilocarpin does not seem to act dangerously on the subjects of heart-disease, and, indeed, can be employed when no other diaphoretic procedure, for so long a period, would be ventured upon. Indeed, as a therapeutical agent for the production of diaphoresis, it is superior to any other method in use, being more

veins a retardation of the heart's action takes place suddenly, without any prior acceleration.

7. Doses not exceeding gr. $\frac{1}{2}$ (.03 Gm.) do not exert any particular effect on the alimentary canal; but large doses, gr. $\frac{5}{8}$ to gr. jss (.05 to .10 Gm.), induce purging, or even bloody stools, with intestinal movements, and the development of gases.[1]

The quantity of urine and the amount of urea are both increased during the twenty-four hours succeeding its administration.[2]

It is uncertain whether jaborandi exercises any direct effect upon the heart.

easily employed, while its action is more certain and more complete, without being more, or even as dangerous, as most of them. Its superiority over the various sweating-baths in *ascites*, *hydrothorax*, *asthma*, etc., is most marked. It is true that diaphoretic treatment is thought less of than formerly; but in several cases the difficulty of its application, rather than its inefficacy, is the cause of its not being resorted to. Speaking from his own experience, Dr. Curschmann has found the pilocarpin very useful in *œdema*, in *dropsy* of the cavities from heart or lung disease, and in *chronic nephritis*, etc., and that after diuretic, drastic, and other means have failed. He believes that a large field for its employment may be found in *pleurisy* accompanied by serous exudation, both in promoting the absorption of this, and in preventing its re-accumulation after paracentesis. It is evidently indicated in *chronic rheumatic affections*, at least so far as these are amenable to diaphoretic treatment,[3] and in some chronic skin affections, its use has been attended with considerable success.

---

[1] [Medical News and Library, Phila., Oct. 1877, p. 154; from the Med. Times and Gaz., Aug. 25, 1877.]

[2] [Drs. Tyson and Bruen, Am. Journ. Med. Sciences for July 1, 1877.]

[3] [Phila. Med. and Surg. Reporter for Oct. 6, 1877.]

Prof. Demme[1] gives, in dropsical affections of children, doses of gr. $\frac{1}{12}$ to $\frac{1}{3}$ (.005 to .02 Gm.) of pilocarpine, which he regards as an efficacious diaphoretic and sialagogue in the treatment of certain diseases of children, and in appropriate doses it is well borne by the youngest patients. Unpleasant symptoms are of very rare occurrence, and can probably be altogether prevented by administering small doses of brandy before the injection.

The cases for which pilocarpine is especially suitable are the parenchymatous inflammations of the kidney with dropsy, following scarlatina and diphtheria. In the majority of cases the flow of urine is decidedly increased, while the quantity of blood and albumen in the urine is diminished rather than augmented.

Mode of Administration, and Dose.

The infusion of the powdered leaves is a good method of exhibiting the drug. A drachm should be steeped in half a pint of hot water, and when sufficiently cool stirred up and one-half the quantity drunk, half an hour later the remainder should be taken, without straining the infusion. This is generally sufficient to cause profuse sweating within an hour. Ptyalism is less constant in its occurrence. Experience, however, is in favor of using some of the pharmaceutical preparations in preference to the crude drug, as being more reliable and agreeable.

Pilocarpine is conveniently adminstered by hypodermic injection. Gerrard found that the nitrate and hydrochlorate of pilocarpin, in doses of one-half a grain, also produced the full effects of jaborandi in substance.

The fluid extract of jaborandi is now largely used, the dose being a fluidrachm, representing a drachm of the leaves. An elixir is also made by some pharmacists containing the virtues of one drachm in six fluidrachms.]

---

[1] [Med. Exam., July, 1878.]

[LIQUOR FERRI DIALYSATUS—SOLUTION OF DIALYZED IRON.

This preparation is of recent introduction, and has been well received. When well made it is a clear, neutral, very deep wine-colored liquid, free from taste and apparent astringency, and bearing perfectly dilution with pure water.[1] It is a pure and powerful chalybeate with all the advantages of iron in the usual form ; it is borne well by the stomach, and does not cause constipation nor distress the digestion. Chemically it would appear to be a ferric hydrate kept in solution by a small quantity of ferric chloride. It is made by precipitating ferric chloride with dilute water of ammonia, washing the ferric hydrate precipitated, dissolving it in a solution of ferric chloride, and placing the result in a dialyzer. Graham, the inventor of the process, believed that muriatic acid passes through the dialyzer, mainly, and that the iron is left in the form of the soluble, colloidal, ferric hydrate; but in practice it has never been obtained entirely free from the chloride. Dialyzed iron would seem to furnish us with an efficient substitute for the hydrated sesquioxide in the treatment of *poisoning by arsenious acid.* It is precipitated by various salts, and should be administered alone in doses of from ten drops to a drachm, after meals. It claims to contain about the same proportion of iron as the muriated tincture, and, as it is said not to injure the teeth, it proves an admirable substitute for it, in *chlorosis*, *anæmia*, and allied conditions.[2]]

LARICIS CORTEX—LARCH BARK [Ph. B.].

Larch bark is seldom if ever used in medicine.

LAUROCERASI FOLIA—CHERRY-LAUREL LEAVES [Ph. B.]

The distilled cherry-laurel water contains prussic acid, but, as it is very variable in strength, its use cannot be advised.

---

[1] [Phila. Med. Times, vol. vii. p. 492, article on Dialyzed Iron.]

[2] [See article on the "Hæmatinic Properties of Dialyzed Iron," by Dr. Robt. Amory, in Boston Med. and Surg. Journal for April 3, 1879, vol. c. p. 453.]

MORI SUCCUS—MULBERRY JUICE [PH. B.]

Is only used as a flavoring ingredient.

MUSCARIN—MUSHROOM-POISON.

[*An active principle obtained from Agaricus Muscaria.*]

Muscarin, like gelsemium, causes contraction of the pupil when administered internally, but dilatation when topically applied. Profuse perspiration and salivation, with flushing giddiness, intestinal griping, and depression of the heart's action follow its use.

Murrel recommends it in the sweating of phthisis in dose of 5 minims of a one per cent. solution of liquid extract.

[NITROGLYCERINUM—NITROGLYCERIN.

Trinitroglycerin or Glonoin.

A pale, yellowish, oily liquid, crystallizing in needles at a low temperature, and has a density of 1.60 (59° F.). It is nearly insoluble in water, but dissolves freely in ether and alcohol, forming compounds that explode on percussion. It is the basis of various blasting compounds such as *dynamite*, *glyoxylin*, *dualin*, etc.

INTERNAL EFFECTS.

Nitroglycerin is a poison exerting a marked effect on the nervous system, even when given in minute doses, producing, according to Brunton and Tait, "accelerated respiration, paralysis, loss of reflex action, and, apparently to a great degree, of sensation, and death from stoppage of the respiration." In frogs, after death, the brain is anæmic and heart empty, but the lungs are engorged with blood.

MEDICAL USES.

It has been recommended for *epilepsy*, *headache*, and *asthma*; it has no smell, but its vapors cause intense headache.[1] Of late it has been highly praised by Dr. Murrell for the relief of *angina pectoris*. Used in drop doses of a one per cent. solution and cautiously increased, marked effects are produced, it is said, and decided relief afforded.[2]]

---

[1] [National Dispensatory, Philadelphia, 1879, p. 939.]

[2] [The Practitioner London, 1879, vol. xxii. p. 208.]

NITROUS OXIDE GAS.

[*Made from nitrate of ammonia by heat.*]

Physiological Action.

Laughing-gas has been generally introduced as an anæsthetic, a very brief inhalation causing perfect insensibility, preceded occasionally by slight excitement, and attended by an amount of lividity which at first sight seems most alarming. It has been shown that this insensibility is simply a condition of modified asphyxia, as during narcosis only two-thirds of the normal amount of carbonic acid is given off, and immediately after recovery only one-third.

Therapeutical Action.

Nitrous oxide gas is very valuable for the performance of such small operations as tooth extraction; but anæsthesia cannot safely be kept up long enough to render it available during more prolonged surgical manipulations. During its administration we must rigidly exclude all atmospheric air, and thus prevent those violent and varied evidences of excitement which have so often caused amusement during the old-fashioned inhalation of laughing-gas.

A popular mode of procuring anæsthesia now is to take advantage of the rapid action of this gas in the first instance, and then continue the process by means of ether or ethidene dichloride.

PEPSINA—PEPSIN.

Pepsina Porci.

Pepsin is the most important digestive element of the gastric juice, and more especially reduces the albuminoid and proteinaceous constituents of food to a fit state for absorption.

Pepsin probably acts, in part at least, by stimulating

There can be little doubt that many dyspeptic conditions are due to a deficiency of gastric juice, and attempts may be made to supply this by prescribing pepsin, preferably in combination with dilute hydrochloric acid.

In *atonic dyspepsia*, in vathe secreting function of the stomach mucous membrane.

The ordinary pepsin wines rapidly become inert, because the alcohol does not prevent the ferment from changing, glycerine alone having this power. [When given in combination with acids, on the contrary, the pepsin is much more active than in the form of powder. An artificial gastric juice thus made is of great service in weak digestion due to atony of the stomach.]

rious *anæmic* and *cachectic conditions*, in the *diarrhœa* of *children*, in some forms of *spasmodic asthma*, its use seems to be attended with good results; but we may well share Dr. Wood's scepticism as to the possibility of materially aiding the digestion of food by the small doses usually prescribed.

Pepsin has also been recommended as an addition to nutritious enemata, so as to insure some preliminary digestion of the injected food, and the peptonised milk, gruel, and beef-tea, prepared as recommended by Roberts, of Manchester, with liquor pancreaticus are very useful when administered either by the mouth or the rectum.

Dose, gr. ij–v (.12 to .30 Gm.). Or we may use Prof. Liebreich's Pepsin-Essenz. [It may be conveniently prescribed in the form of Saccharated Pepsin, Liquor Pepsini, Boudault's Acid Pepsin, or as Lacto-peptine.]

[PETROLEUM—PETROLEUM.

Rock or coal oil.

To a limited extent in the South of Europe, but in great quantity in the United States, petroleum is found either oozing from the ground or obtained by drilling wells. Crude oil, which is of a dark color of the consistence of molasses but decidedly fluorescent, yields by rectification a number of hydro-carbonaceous compounds, some of which have sufficient density to be used as ointments (cosmoline, vaseline, etc.). On account of their property of resisting oxidation, never becoming rancid in the hottest weather, unguentum petrolei, and petroleol, as they are called, are now being largely employed as substitutes for lard as the basis of ointments. Coal oil has been used externally as an ointment for painful *rheumatic joints* and in the treatment of *scabies* with good results. The combination of ung. petrolei with carbolic acid (5 per cent.) on account of local anæsthetic effects of the latter, makes a very useful embrocation for chillblains. Cosmoline is an excellent unirritating dressing for burns and scalds, or excoriations and wounds and is much used in hospitals. Internally, crude oil has been given in the case of tapeworm, also in whooping cough and bronchitis, but is rarely used by the medical profession. In excessive doses it produces oppression, giddiness, palpitation, faintness, and headache, but no tendency to stupor or even sleep. In one case frightful convulsions appeared, in another death occurred with symptoms of gastro-enteritis on the twentieth day after it had been taken (Stillé.) The urine after taking the oil has a peculiar odor, and it may have a special action upon the kidneys.

Rhigolene, one of the light products, has been used to produce cold with the hand-spray as a substitute for ether; in *chorea*, when it is applied along the spine, and as a local anæsthetic for some surgical operations. Its garlicky odor and explosiveness are the principal objections to its use.

Vaseline is a soothing and agreeable application in skin diseases, but wanting solidity, is best used in combination with white wax or other ointments.

Kaposi strongly recommends an ointment in eczema, made by dissolving and thoroughly incorporating by heat equal parts of vaseline and lead plaster, adding a little oil of bergamot.

[Cosmoline is also a petroleum product, which melts at the temperature of the body; it is odorless, and as it does not become rancid like ordinary fats, it is a good basis for ointments. It also may be obtained as a cosmoline cerate, as fluid cosmoline, and in various combinations. It is an excellent dressing for burns.]

[PETROSELINUM—PARSLEY.

The root of Petroselinum sativum (Lindley, Flor. Med.),
U. S. Secondary.

The neutral active principle, APIOL, has attained some reputation in the treatment of *intermittents*, and is also used in *neuralgia* and *dysmenorrhœa*. Its nauseating taste requires it to be given in capsule (gr. $3\frac{9}{10}$). Dose, one to four.]

[QUEBRACHO—QUEBRACHO BARK.[1]

The bark of the tree Aspidosperma Quebracho (Schlechtendahl).

A member of the family of Apocyneæ, the aspidosperma quebracho is a native of northern part of South America, and is obtained from the province Catamarea,[2] of the Argentine Republic, where it has long been popular as a febrifuge.

In 1878, Schickendanz sent some of this bark to Europe, as a succedaneum for cinchona bark, where Dr. Penzoldt,[3] after testing its therapeutic effects, pronounced it a remedy of considerable power, and Fraude[4] isolated from it an alkaloid "aspodispermine," which is insoluble in glycerine, but dissolves in fats and oils; and produces the same physiological effects as the bark itself. Dose, as an antiperiodic, gr. xviij. (Guttman).

The following pharmaceutical preparations have been made:—

Tinctura Quebracho (macerate in 5 parts alcohol, 50 per cent. for 8 days and filter).

Tinctura Quebracho Composita (bark 2, orange peel 1 part, alcohol 5 parts).

Vinum Quebracho (bark 1, alcohol, 56 per cent., 2 parts, white wine 16 parts).

Elixir Quebracho.

Extractum Quebracho Fluidum. Dose, ♏xx–lx (1.30 to 4. Gm.).

Physiological Effects.

Digestive Tract.—Taste bitter, astringent, and persistent or nauseating. Salivation has appeared both in dogs and man. Has some astringent effects upon the alimentary tract. When used for any length of time, disagreeable effects are often produced which forbid its continuance.

Therapeutical Effects.

The tincture has been recommended for diarrhœa in phthisis; and in chronic diarrhœa in children.

---

[1] Working Bulletin, Quebracho. Parke, Davis & Co., Detroit, 1880.

[2] Primke, Pharm. Zeitung, No. 9, 1880.

[3] G. Fraude, Berichte der Deutschen Chem. Gesellschäft, 1878.

[4] F. Penzoldt, Berlin Klinische-Wochenschift, No. 19, 1879.

Nervous System.—Motor paralysis of the limbs of central origin (Penzoldt). Paralysis of respiration, diminished frequency of heart's action (not due to inhibition). Death caused by general paralysis, dyspnœa, and convulsions (from apnœa?).

Respiration.—Breathing deepened and retarded by moderate doses.

Special Action.—Principally upon motor apparatus of respiration. No perceptible influence upon temperature, nor upon malarial manifestations.

In moderate doses may relieve restlessness of fevers, but has special value where the respirations are increased greatly above the normal. In attacks of rapid breathing during consumption, and in cases of palpitation accompanying cardiac hypertrophy quebracho has given marked relief.

It is used with great benefit in emphysema, bronchial catarrh, periodic asthma, etc. In asthma dependent upon valvular insufficiency it is less valuable than in spasmodic asthma where it exerts a special action.]

[RESORCIN—RESORCIN.

Dose, gr. x–ʒj (.65 to 4. Gm.).

Resorcin ($C_7H_8O_2$) is formed by fusing certain gums (galbanum, assafœtida, ammoniac, etc.), with potassium hydrate, the resulting mass dissolved in water super-saturated with sulphuric acid, subsequently filtering and agitating the filtered solution with ether which dissolves out the resorcin, and from which it is subsequently obtained by evaporating, and distilling; the resorcin sublimes and condenses in radiated crystals. (Wurtz.) The crystals are colorless and very soluble in water, alcohol, and ether.

Resorcin is very destructive to infusoria and the low forms of organisms of fermentation and putrefaction, it is more active even than carbolic acid. It may be applied locally to parasitic skin diseases, or suppurating wounds, without producing irritation.

Taken internally it accelerates the pulse, stimulates the secretions, increasing the flow of the saliva and the activity of the sudoriparous glands; and secondarily depresses the temperature and the circulation. As an antipyretic the dose is from gr. xx to ʒj (1.33 to 4. Gm.), and in this dose it has been used in *hyperpyrexia* to meet the same indications as maximum doses of quinia, for which it may be substituted. It may also be administered hypodermically.]

RHAMNI SUCCUS—BUCKTHORN [Ph. B.].

Buckthorn has some purgative properties, but is almost never used in modern practice.

ROTTLERA—KAMALA, U. S. Secondary.

[*The glandular powder and hairs obtained from the capsules of Rottlera tinctoria* (Roxburgh), *U. S.*

Dose, ʒj–iij (4. to 12. Gm.).]

Effects.

Physiological.	*Therapeutical.*
Kamala is a vermicide, killing the tape-worm rapidly; it also possesses purgative properties.	Kamala is an efficient anthelmintic, differing from other remedies of the class in its cathartic action.

SALICIN.

Salicin acts as a bitter tonic, and has some antiseptic and antiperiodic qualities, which have caused it to be used, with only partial success, in the treatment of *malarial affections.* Recently, however, it has been most extensively employed, on the recommendation of Dr. Maclagan, as a remedy for *acute rheumatism,* in which disease from 10 to 30 grains, every two, three, or four hours, in powder mixed with water, generally succeeds, within forty-eight hours, in relieving pain and reducing temperature. Dr. Maclagan holds it to be safer than salicylic acid which is apt to depress the heart, weakened and softened as it often is in acute rheumatism and myocarditis. It is also a useful remedy in neuralgia.

[Although salicin is far less efficient in malarious affections than the alkaloids of cinchona bark, it may be used with more effect than quinia to reduce the temperature in the *hectic fever* of phthisis; a preliminary dose of twenty grains given before the fever comes on, renders the patient more comfortable, and often prevents the exacerbation.]

SUMBUL

Has antispasmodic properties, but is very rarely prescribed·

THYMOL.

This is an excellent antiseptic, less powerful than carbolic acid, but ten times less poisonous, and much less irritating.

Prof. Volkman has used it instead of carbolic acid in carrying out Prof. Lister's antiseptic plan, and recommends the following solution :—

℞. Thymol.	gr. xv	or	1	Gm.	
Alcoholis	ʒijss ;	"	10	"	
Glycerinæ	ʒv ;	"	20	"	
Aquæ	Oij ;	"	1000	"	M.

To be used as a spray.

It has also been found a good application in eczema and psoriasis, and ringworm.

[The glycerite of thymol diluted with water makes an excellent mouth wash :—

℞. Thymolis	gr. xviij	or	1	2 Gm.	
Glycerinæ,					
Alcoholis	āā ʒvijss	"	30	"	
Aquæ destillat.	℥xvij	"	540	"	M.

(*Pharmac. Central.*, 1881, p. 167.)]

TRIMETHYLAMINE AND ITS HYDROCHLORATE.

Trimethylaminis hydrochloras. Dose gr. iij–x (.20 to .65 Gm.).

Propylamine is an impure trimethylamine.

Lowering of temperature and pulse is said to follow the use of this drug, and it has been much recommended as a remedy for *acute rheumatism.* [Trimethylamine is irritating to the stomach, and should be given well diluted; peppermint water is the usual vehicle. On account of its depressing effect upon heart and lungs, it may lead to fatal narcosis from retention of carbonic acid in the blood. The proper treatment of poisoning would be by opium and belladonna (morphia and atropia), and stimulants. Ammonia should not be used.]

LEECHES.

[*Hirudo. Sanguisuga Officinalis.*]

Leeches are undoubtedly the most convenient means for the local abstraction of blood, and are used to relieve pain, which they do very effectually in certain local inflammations, as *pleurisy, pericarditis, orchitis, iritis, hepatitis, peritonitis;* and there is reason to believe that, when applied sufficiently early, they may even moderate the inflammatory process. Their action, no doubt, may frequently be explained by direct vascular communication between superficial vessels and those of deeper parts.

Each leech may contain about 1½ dr. of blood, and subsequent fomentation may draw so much more from the skin as to raise the total amount up to half an ounce. Should the subsequent bleeding prove difficult of arrest, as sometimes happens, we may succeed in staunching the flow by means of pressure, cold, various astringents, the application of solid nitrate of silver, or the twisted suture. [The American only takes about one-third as much blood as the imported leech, and, on this account, is preferred by some in the treatment of diseases of children.]

Special cautions in the use of leeches are—never to apply them, if possible, to any part over which firm pressure cannot subsequently be made, as the larynx; not to apply them in the evening, when, for some unexplained reason, the bleeding is more apt to be troublesome; and, of course, never to allow their use in any victim of the hemorrhagic diathesis.

If leeches will not bite, we must smear the skin with cream or freshly-drawn blood, or immerse the animal itself in porter, which seems to have a stimulating effect; and should one be accidentally swallowed we can kill it, and cause its expulsion from the stomach, by common salt.

APPENDIX.

(ADDED BY THE AMERICAN EDITOR.)

POISONS.

A poison is a substance, of animal, vegetable, or mineral nature, which, when administered in small quantity, is capable of producing deleterious effects upon the human system. It may be introduced into the economy in a gaseous, liquid, or solid form, through any of the channels of absorption, though more commonly by the gastro-intestinal tract.[1]

GENERAL ANTIDOTE FOR POISONING WHEN THE NATURE OF POISON IS UNKNOWN.

℞. Magnesiæ,
Pulv. carbo. ligni,
Ferri oxidi rubri, āā. M.
To be given freely in a sufficient quantity of water.

Or, as suggested by Jeannel—

Calcined magnesia,	℥ij ;
Washed animal charcoal,	℥j ;
Water,	℥xx ;

to be kept well covered; when exhibited to be mixed with Solution of ferrous sulphate (sp. gr. 1.45) ℥ijss, and well agitated.

Given in doses of ℥jss–iij in poisoning by arsenic, zinc, the alkaloids, etc.[2]

This preparation is harmless, but is effective, for its ingredients are antidotes to the most common and active poisons. With it may be given demulcent drinks, such as milk or flour and water, to dilute the poison and protect the stomach.

---

[1] See title *Antidotes* for general considerations, page 51.

[2] The Practitioner's Reference Book, R. J. Dunglison, Phila., 1879, p. 228.

Prompt Treatment Table of Poisons.

Arranged alphabetically for ready reference.

Acetic Acid. — The alkaline carbonates, chalk, or magnesia. Vomiting should be encouraged and demulcent drinks freely given.

Aconite.—Active emetics, or stomach-pump. Stimulation externally and internally. Digitalis is a physiological antidote; also finely-powdered animal charcoal, or tannin, and astringent infusions.

Alcohol.—Stomach-pump; cold affusion; inhalation of vapor or hypodermic injection of ammonia; use of electricity, etc.

Alum, and Sulphate of Alumina and Potassa.—Warm dilute drinks to produce emesis; hydrate of magnesia, or weak solution of carbonate of ammonia; stomach-pump.

Ammonia.—Vegetable acids, as a little vinegar or lemon-juice; olive oil; milk given copiously: stomach-pump should not be used.

Amylene.—Same treatment as for chloroform poisoning.

Antimony and its Salts.—Tannin, as in tincture or infusion of cinchona, infusion of green tea, or of galls. Free vomiting with warm mucilaginous drinks, or stomach-pump. Opium, and internal and external stimulation may be employed subsequently.

Arsenious Acid.—Hydrated sesquioxide of iron, to be given in a moist state, in tablespoonful doses, followed by castor-oil. (The hydrate may be extemporaneously prepared by adding aqua ammoniæ to dilute tinctura ferri chloridi.) Solution of dialyzed iron, and freshly-precipitated hydrate of magnesia have also been employed. These are not reliable if the arsenic has been taken in form of powder. In the absence of vomiting, prompt emesis by sulphate of zinc or warm mustard and water. Warm demulcent drinks.

Barium, Salts of.—Sodium or magnesium sulphate; emetics and stomach-pump.

Belladonna.—No reliable chemical antidote; tannin and animal charcoal have been employed. Physiological antidote, morphia, which may be administered subcutaneously. Usual treatment for narcotic poisons.

Bismuth Subnitrate.—Albumen, milk, sugar, mucilaginous drinks.

Brucia.—Same treatment as for poisoning by nux vomica.

Calabar Bean.—Physiological antidote, atropia, cautiously administered hypodermically.

Camphor.—Emetics, stimulants, wine, and opium.

Cantharides.—Free emesis to be encouraged with warm demulcent drinks; castor oil; demulcent injections.

Carbolic Acid.—Saturated solution of saccharate of lime has been recommended as an antidote. Early use of the stomach-pump. Olive oil; flour and water, etc.

Carbonic Acid Gas. — Artificial respiration, friction, stimulants, fresh air, and electricity.

CHLORAL.—Stomach-pump; stomach washed out with tea or coffee. Diffusible stimulants. General treatment same as for narcotic poisoning, or poisoning by chloroform vapor. Heat externally.

CHLOROFORM.—In poisoning by liquid chloroform, use the stomach-pump and emetics. If collapse occur during anæsthesia, reverse the patient as recommended by Gross. Ammonia by inhalation, ice in rectum, hypodermic injections of brandy and ammonia, electricity, etc.

CHROMIUM, COMPOUNDS OF.—Magnesium carbonate or chalk, in milk, albumen, or water, followed by emetics.

CITRIC ACID.—Alkaline carbonates, chalk, or magnesia.

COCCULUS INDICUS.—Mucilaginous drinks, stimulants, and emetics.

COLCHICUM.—Prompt emesis, castor oil, demulcents, opium, and stimulants.

CONIUM.—Mustard and warm water. Active stimulation, externally and internally.

COPPER, PREPARATIONS OF.—Antidote, white of eggs freely administered, or milk. Vomiting should be aided by warm mucilaginous drinks; stomach-pump if necessary.

CORROSIVE SUBLIMATE.—Albumen, mixed with water and given copiously, forms insoluble compounds; white of one egg neutralizes four grains of corrosive sublimate. Gluten, or wheat flour paste, or milk, also employed. Free vomiting, aided by warm, diluent drinks; stomach-pump to be used with caution—may produce perforation.

CREASOTE.—Emetics or stomach-pump; demulcent and mucilaginous drinks.

CROTON OIL.—Same general treatment as for other irritant poisons, to counteract excessive vomiting and purging. Opium, stimulants, demulcents.

CURARE.—Same general treatment as that mentioned for poisoning by narcotics; artificial respiration, hot coffee, etc.

CYANIDE OF POTASSIUM.—See Potassium cyanide.

DIGITALIS.—Vegetable infusions containing tannic acid render the active principle insoluble. Give emetics and hot applications to surface.

ETHER, VAPOR OF.—Cold affusion; exposure to current of air; artificial respiration, electricity.

GOLD, PREPARATIONS OF.—Sulphate of iron; mucilaginous drinks.

HYDROCHLORIC ACID.—See Muriatic Acid.

HYDROCYANIC ACID.—Mixture of protosulphate and sesquisulphate of iron (ferrous and ferric sulphate), followed by solution of potassium carbonate. Being rapidly fatal, treatment must be instantaneous. Cold affusion; cautious inhalation of ammonia and chlorine vapors; stimulation externally and internally.

HYOSCYAMUS.—Same general treatment as for poisoning by belladonna and vegetable narcotics.

IODINE.—Starch, or flour, in water.

IRON, CHLORIDE AND SULPHATE.—Magnesia, copious diluent drinks.

LEAD SALTS.—Zinc sulphate, producing free emesis, and forming insoluble lead sulphate. Milk and white of egg, given copiously, form insoluble compounds. Solutions of magnesium or sodium sulphate, freely administered, act as antidotes and cathartics; castor oil may also be administered.

LOBELIA.—Emetics, purgatives, anodynes, stimulants.

MÉTHYLENE, BICHLORIDE OF.—Same treatment as for poisoning by chloroform vapor.

MORPHIA.—See opium.

MURIATIC OR HYDROCHLORIC ACID.—Solution of alkaline carbonates in water or milk; magnesia or chalk suspended in milk; soap-suds; scrapings from whitewashed walls (in the absence of other articles); free use of barley water, oily emulsions, gruel, and milk in large quantities.

NITRATE OF POTASSIUM.—See Potassium.

NITRIC ACID AND NITROMURIATIC ACID.—Same treatment as already detailed for poisoning by muriatic acid. Dilute solution of sodium carbonate, or fluid magnesia, with water, and milk or demulcents may be given.

NITROUS OXIDE.—Same general treatment as for poisoning by chloroform vapor.

NUX VOMICA.—See Strychnia.

OIL OF BITTER ALMONDS.—Same treatment as for hydrocyanic-acid poisoning.

OPIUM, AND ITS PREPARATIONS.—Antidotes, tannic acid and iodated iodide of potassium. Physiological antidote, solution of atropia or tincture of belladonna. Treatment, direct emetics, as large doses of zinc sulphate, repeated if necessary, or mustard and warm water, or stomach-pump. For the narcotic effect of the drug, affusion with cold water, walking the patient, arousing him by shaking and shouting; flagellations; enemata of strong coffee. If unsuccessful, electricity and artificial respiration.

OXALIC ACID.—Avoid the use of alkalies or their carbonates, as they form poisonous salts with the oxalic acid. Give chalk or calcined magnesia, or its carbonate, suspended in water or milk, which forms insoluble and inert earthy oxalates; or saccharated solution of lime. After-treatment, mucilaginous drinks, lime-water, and oil; warmth and stimulants.

PHOSPHORUS.—Free vomiting by cupric sulphate; albuminous and mucilaginous drinks, in which hydrate of magnesia is suspended. Oil, being a solvent of phosphorus, should be avoided. Old oil of turpentine (containing oxygen), oxygenated water, oxygen inhalations, animal charcoal, have been employed as antidotes.

PHYSOSTIGMA.—See Calabar Bean.

POTASSA.—Mild vegetable acids, as dilute vinegar or lemon-juice; demulcent drinks; olive oil, in large quantities, produces a soap. Milk may be copiously administered. Stomach-pump should not be used.

POTASSIUM BITARTRATE (cream of tartar).—Same treatment as for the nitrate. Dilute solution of potassium bicarbonate reduces bitartrate to harmless neutral tartrate.

POTASSIUM CYANIDE.—Weak solution of ferrous sulphate converts it into Prussian blue; subsequent treatment similar to that for hydrocyanic acid.

POTASSIUM NITRATE.—No direct antidote; stomach-pump; free vomiting, and copious mucilaginous drinks; stimulants, opium, and coffee, if great depression exist.

PRUSSIC ACID.—See Hydrocyanic Acid.

SILVER, THE SALTS OF.—Albumen, milk. If nitrate, give the chloride of sodium, followed by emetics.

SODA, AND ITS PREPARATIONS.—Same treatment as for potassa poisoning.

STRAMONIUM.—Same treatment as for poisoning by belladonna. Morphia should be administered hypodermically.

STRYCHNIA.—Bromide of potassium, in very large doses. Hydrate of chloral, nitrite of amyl, and atropia have also been recommended. Prompt emesis by stomach-pump, or mustard and warm water, or mixture of ipecacuanha and zinc sulphate. Inhalation of chloroform, continuously employed, may relieve tetanic rigidity.

SULPHURIC ACID.—Same treatment as for poisoning by muriatic acid. Solution of sodium carbonate in milk and water. Stomach-pump must not be used.

SULPHATE OF INDIGO.—Calcined magnesia and milk, or fluid magnesia.

TARTARIC ACID.—Same treatment as for poisoning by citric acid or oxalic acid.

TARTAR EMETIC.—See Antimony.

TOBACCO.—Stomach-pump or emetics; whiskey, strychnia, stimulating injections *per anum*, containing turpentine or ammonia.

VERATRUM.—Rapid emesis, stimulants, with laudanum or some other opiate. Tannin has been proposed as an antidote.

ZINC CHLORIDE.—Albumen given liberally. Free emesis, copious warm mucilaginous drinks, or stomach-pump.

ZINC SULPHATE.—Tepid water with milk and albumen; infusions containing tannic acid. Stomach-pump. Laudanum and starch enemata.

There are a number of so-called *vegetable irritants*, such as aloes, scammony, and jalap, which may give rise to toxical symptoms. Their effects should be treated on general principles, such as the employment of emetics, diluents, castor oil, opium, and fomentations. The same remarks apply also to the various articles of diet, such as meat, fish, lobsters, or fruits, which occasionally produce similar results. *Irritant gases*, as chlorine, nitrous acid, or sulphurous acid vapor, etc., may act as poisons, and their effects should be treated by removal of the patient from the causes, cold affusion, and by antidotes as directed. The numerous poisonous *fungi*, which may be taken into the stomach, may also produce symptoms, and require treatment on general principles.

Bites of venomous reptiles require special treatment; the wound may be sucked with impunity, provided there be no abrasion upon the lips or tongue. The limb above the point having a ligature placed around it, or compressed, the part involved may be excised or cauterized with the hot iron or nitric acid. The intravenous injection of ammonia has also been advised. Stimulants, as ammonia or brandy, should also be freely given. The local treatment here detailed would also be applicable to *bites of rabid animals.*

The following table (after Taylor "On Poisons,") gives a comprehensive review of the most approved antidotes for the several principal poisons noticed in the foregoing pages.

NON-METALLIC POISONS.

	Poisons.	*Antidotes.*
Mineral Acids	Sulphuric Nitric Muriatic Nitro-muriatic	Magnesia mixed with water or milk; calcium carbonate; compound chalk powder; soda; potassa; the fixed oils.
Vegetable Acids and their Alkaline Salts.	Oxalic Tartaric	Calcium carbonate (chalk or whiting).
	Potassium Binoxalate Potassium Bitartrate	Calcium carbonate. Calcium sulphate, and water. Sodium carbonate in solution.
Alkalies.	Potassa, soda, ammonia, and their carbonates	Vinegar, lemon-juice, citric acid, or oil.

METALLIC POISONS.

Arsenic and soluble arsenites.	Hydrated peroxide of iron; hydrated magnesia; solution of dialyzed iron. Mixture of oil and lime-water.
Corrosive sublimate, and salts of mercury.	Albumen, gluten, or flour, diffused in water or milk.
Phosphorus.	Cupric sulphate; old oil of turpentine; water containing magnesia.
Baryta and its soluble salts.	Sodium, potassium, magnesium, or calcium sulphate.
Barium carbonate.	Mixture of magnesium sulphate and vinegar.
Alum.	Sodium or ammonium carbonate.
Soluble salts of lead.	The alkaline, or soluble earthy sulphates.
Lead carbonate.	Magnesium sulphate and vinegar.

Poisons.	*Antidotes.*
Soluble salts of copper.	Albumen, gluten, flour diffused in water; milk.
Tartar emetic.	Decoctions and tinctures containing tannic acid. Magnesia.
Antimony chloride.	Sodium carbonate; magnesia.
Salts of tin.	Milk; sodium carbonate; magnesia.
Zinc sulphate, or acetate.	Milk; sodium carbonate; magnesia.
Ferrous sulphate.	Sodium or ammonium carbonate.
Silver nitrate.	Sodium chloride, and emetics.

NARCOTIC POISONS.

Opium; hyoscyamus.	Emetics; stomach-pump, cold affusion. Strong decoction of coffee; electro-magetism; tannic acid.
Prussic acid.	Ammonia; chlorine; cold affusion; iron and potassium carbonate (see p. 105); or cupric sulphate (1 Gm. followed by 0.5 Gm., every five minutes until vomiting is produced).

MODES OF DISTINGUISHING SOME OF THE VEGETABLE ALKALOIDS WHEN IN POWDER.

Treat the powder with nitric acid; this is colored red by *Brucia*, *Delphinia*, *Morphia*, and by the *Strychnia* of commerce, but not the pure. If the reddened acid become violet on the addition of protochloride of tin, it is *Brucia;* if it become black and carbonaceous, it is *Delphinia.* If the powder be fusible without decomposition, and decompose iodic acid, it is *Morphia;* if it be not fusible without decomposition, and do not decompose iodic acid, it is *Strychnia.* If the powder strike a green with nitric acid, it is *Solania;* if insoluble in ether, and do not redden nitric acid, it is *Emetia;* if insoluble in ether, and do not redden nitric acid, but should melt and volatilize with heat, it is *Atropia;* if thus affected by ether or nitric acid, but do not volatilize, it is *Veratria.* (Griffith.)

PTOMAINES.

It has recently been announced that during decomposition of the human body substances are formed called *Ptomaïnes*, which give reactions very much like some of the above alkaloids. Their existence should put the examiner on his guard. Gautier declares that they may occur in the living body, and he has extracted a poison resembling that of serpents from human saliva, and from the urine he has also obtained the so-called cadaveric alkaloids. Ptomaïnes are distinguished from the alkaloids veratria, morphia, and codeia with difficulty, but a plan has been devised by Brouardel and Boutmy (Comptes Rendus, 92, p. 1056; Annales d'Hygiene, v. p. 497), by which this is accomplished by potassium ferricyanide and silver bromide as reagents: "If a base be present, indicated by the formation of a precipitate with potassium iodo-mercurate, and this instantly change potassium ferricyanide into ferrocyanide, giving a precipitate of Prussian blue on the addition of ferric-chloride, a ptomaïne is present; whereas precipitation by the iodo-mercurate, coupled with the non-reduction of the ferricyanide to the ferrocyanide, shows that a vegetable alkaloid is being dealt with. Morphia and veratria, of the vegetable alkaloids, are exceptions to the above reaction." This may be supplemented by the silver test. If a piece of photographic paper imbued with the bromide of silver, be written upon with a quill pen dipped in a solution of the base, and the paper be placed in a dark room, and then washed successively with sodium hypo-sulphite and water, the characters traced upon the paper will be made manifest by reduction which has occurred, if a ptomaïne be present." (Lond. Med. Record, vol. ix. p. 451.)

WEIGHTS AND MEASURES.

APOTHECARIES' WEIGHTS AND MEASURES.

One Pound, ℔ = 12 Ounces = 5,760 Grains.
One Ounce, ℥ = 8 Drachms = 480 Grains.
One Drachm, ʒ = 3 Scruples = 60 Grains.
One Scruple, ℈ . . . . . = 20 Grains.
One Grain, gr. . . . . . = 1 Grain.

One Gallon, C = 8 Pints = 61,440 Minims
One Pint, O = 16 Fluidounces = 7,680 Minims
One Fluidounce, f℥ = 8 Fluidrachms = 480 Minims.
One Fluidrachm, fʒ . . . . . = 60 Minims.
One Minim, ♏ . . . . . = 1 Minim.

Note.—In prescribing, the troyounce, drachm, and grain, or the fluidounce, drachm, and minim, only should be used.

RELATION OF WEIGHTS AND MEASURES OF THE U. S. PHARMACOPŒIA TO EACH OTHER.

In distilled water at the temperature of 60°.

One Pound = 0.7900031 Pint = 6,067.2238 Minims.
One Ounce = 1.0533376 Fluidounces = 505.6019 Minims.
One Drachm = 1.0533376 Fluidrachms = 63.2002 Minims.
One Scruple . . . . = 21.0667 Minims.
One Grain . . . . = 1.0533 Minims.

One Gallon =10.1265427 Pounds =58,328.8862 Grains.
One Pint = 1.2658178 Pounds = 7 291.1107 Grains.
One Fluidounce = 0.9493633 Ounce = 455.6944 Grains.
One Fluidrachm = 0.9493633 Drachm = 56.9618 Grains.
One Minim . . . . = 0.9493 Grain.

RELATION OF MEASURES OF THE U.S. PHARMACOPŒIA TO CUBIC MEASURE.

One Gallon = 231. Cubic Inches.
One Pint = 28.875 Cubic Inches.
One Fluidounce = 1.80468 Cubic Inches.
One Fluidrachm = 0.22558 Cubic Inch.
One Minim = 0.00375 Cubic Inch.

WEIGHTS AND MEASURES OF THE METRIC SYSTEM.

MEASURES OF LENGTH.

One Myriametre = 10,000 Metres.
One Kilometre = 1,000 Metres.
One Hectometre = 100 Metres.
One Decametre = 10 Metres.
One METRE = the ten-millionth part of a quarter of the meridian of the earth.
One Decimetre = the tenth part of one Metre, or 0.1 Metre.
One Centimetre = the hundredth part of one Metre, or 0.01 Metre.
One Millimetre = the thousandth part of one Metre, or 0.001 Metre.

(A metre is equal to 39.37 inches; a centimetre to $\frac{4}{10}$ of an inch; and a millimetre to $\frac{1}{25}$ of an inch.)

WEIGHTS.

One Myriagramme = 10,000 Grammes.
One Kilogramme = 1,000 Grammes.
One Hectogramme = 100 Grammes.
One Decagramme = 10 Grammes.
One GRAMME = the weight of a cubic centimetre of water at 4° C.
One Decigramme = the tenth part of one Gramme, or 0.1 Gramme.
One Centigramme = the hundredth part of one Gramme, or 0.01 Gramme.
One Milligramme = the thousandth part of one Gramme, or 0.001 Gramme.

MEASURES OF CAPACITY.

One Myrialitre = 10 cubic Metres, or the measure of 10 Milliers of Water.
One Kilolitre = 1 cubic Metre, or the measure of 1 Millier of Water.
One Hectolitre = 100 cubic Decimetres, or the measure of 1 Quintal of Water.
One Decalitre = 10 cubic Decimetres, or the measure of 1 Myriagramme of Water.
One LITRE = 1 cubic Decimetre, or the measure of 1 Kilogramme of Water.
One Decilitre = 100 cubic Centimetres, or the measure of 1 Hectogramme of Water.
One Centilitre = 10 cubic Centimetres, or the measure of 1 Decigramme of Water.
One Millilitre = 1 cubic Centimetre, or the measure of 1 Gramme of Water.

RELATION OF METRICAL WEIGHTS TO WEIGHTS OF THE U. S. PHARMACOPŒIA.

Metrical weights.	Exact. equivalents in grains.	Approximate equivalents in grains.	Metrical weights.	Exact. equivalents in grains.	Approximate equivalents Troy weight.
Milligrammes.			Grammes.		
1 =	.0154	$\frac{1}{65}$	1 =	15.434	gr. xv.
2 =	.0308	$\frac{1}{32}$	2 =	30.868	ʒss.
3 =	.0463	$\frac{1}{22}$	3 =	46.302	℈ij.
4 =	.0617	$\frac{1}{16}$	4 =	61.736	ʒi.
5 =	.0771	$\frac{1}{13}$	5 =	77.170	℈iv.
6 =	.0926	$\frac{1}{11}$	6 =	92.604	ʒiss.
7 =	.1080	$\frac{1}{9}$	7 =	108.038	℈vss.
8 =	.1234	$\frac{1}{8}$	8 =	123.472	ʒij.
9 =	.1389	$\frac{1}{7}$	9 =	138.906	℈vij.
Centigrammes.			Decagrammes.		
1 =	.1543	$\frac{1}{6}$	1 =	154.340	ʒiiss.
2 =	.3086	$\frac{1}{3}$	2 =	308.680	ʒv.
3 =	.4630	$\frac{6}{13}$	3 =	463.020	ʒviiss.
4 =	.6173	$\frac{7}{11}$	4 =	617.360	ʒx.
5 =	.7717	$\frac{8}{4}$	5 =	771.701	ʒxiij.
6 =	.9260	$\frac{9}{19}$	6 =	926.041	ʒxv
7 =	1.0803	1	7 =	1,080.381	ʒxviij.
8 =	1.2347	$1\frac{1}{4}$	8 =	1,234.721	ʒxx.
9 =	1.3890	$1\frac{1}{3}$	9 =	1,389.062	ʒxxiij.
Decigrammes.			Hectogrammes.		
1 =	1.543	$1\frac{1}{2}$	1 =	1,543.402	℥iij ℈v.
2 =	3.086	3	2 =	3,086.804	℥vj ʒiij.
3 =	4.630	$4\frac{1}{2}$	3 =	4,630.206	℥ix ʒv.
4 =	6.173	6	4 =	6,173.609	℔j ʒvij.
5 =	7.717	$7\frac{1}{2}$	5 =	7,717.011	℔j ℥iv.
6 =	9.260	9	6 =	9,260.413	℔j ℥vij.
7 =	10.803	11	7 =	10,803.816	℔j ℥x ʒiv.
8 =	12.347	$12\frac{1}{2}$	8 =	12,347.218	℔ij ℥i ʒv.
9 =	13.890	14	9 =	13,890.620	℔ij ℥v.
			Kilogramme.		
			1 =	15,434.023	℔ij ℥viij.
			Myriagramme.		
			1 =	154,340.23	℔xxvi. ℥ix ʒiv.

RELATIONS OF WEIGHTS OF THE U. S. PHARMACOPŒIA TO METRICAL WEIGHTS.

Fractions of a grain in grammes.			Grains in equivalent metrical weights.			Drachms, ounces, and pounds in equivalent metrical weights.		
Grain.		**Grammes.**	**Grains.**		**Grammes.**	**Drachms.**		**Grammes.**
$\frac{1}{64}$	=	0010	1	=	0648	1	=	3 887
$\frac{1}{60}$	=	0011	2	=	1295	2	=	7 775
$\frac{1}{50}$	=	0013	3	=	1943	3	=	11 66
$\frac{1}{48}$	=	0014	4	=	2591	4	=	15 55
$\frac{1}{40}$	=	0016	5	=	3239	5	=	19 43
$\frac{1}{35}$	=	0018	6	=	3887	6	=	23 32
$\frac{1}{30}$	=	0022	7	=	4535	7	=	27 21
$\frac{1}{25}$	=	0026	8	=	5183			
$\frac{1}{24}$	=	0027	9	=	5831	Ounces.		
$\frac{1}{20}$	=	0032	10	=	6479	1	=	31 103
$\frac{1}{16}$	=	0040	12	=	7775	2	=	62 206
$\frac{1}{15}$	=	0043	15	=	9718	3	=	93 309
$\frac{1}{12}$	=	0054	16	=	1 036	4	=	124 41
$\frac{1}{10}$	=	0065	20	=	1 295	5	=	155 51
$\frac{1}{8}$	=	0081	24	=	1 555	6	=	186 61
$\frac{1}{6}$	=	0108	25	=	1 619	7	=	217 72
$\frac{1}{5}$	=	0130	30	=	1 943	8	=	248 82
$\frac{1}{4}$	=	0162	40	=	2 591	9	=	279 92
$\frac{1}{3}$	=	0236	50	=	3 239	10	=	311 03
$\frac{1}{2}$	=	.0324	60	=	3 887	11	=	342 13
						Pounds.		
						1	=	373 24
						2	=	746 49
						3	=	1119 72

RELATION OF MEASURES OF THE U. S. PHARMACOPŒIA TO METRICAL MEASURES.

One Gallon = 3.785 Litres.
One Pint = 4.273 Decilitres.
One Fluidounce = 2.957 Centilitres.
One Fluidrachm = 3.697 Millilitres.
One Minim = 0.061 Millilitre.

RELATION OF METRICAL MEASURES TO MEASURES OF THE U. S. PHARMACOPŒIA.

One Myrialtre = 2641.9 Gallons.
One Kilolitre = 264.19 "
One Hectolitre = 26.419 "
One Decalitre = 2.641 "
One Litre = 2.113 Pints.
One Decilitre = 3.381 Fluidounces.
One Centilitre = 2.705 Fluidrachms.
One Millilitre = 16.231 Minims.

THE METRIC SYSTEM IN MEDICINE,

For Prescription Writing.

♏ j or gr. j equals		06 Gm.
f ʒj or ʒj "	4	"
f ℥j or ℥j "	32	"

The decimal *line* instead of *points* makes errors impossible.

As .06 (Drug) is less than a grain, while 4. and 32. (Vehicle) are more than the drachm and ounce, there is no danger of giving too large doses of strong drugs.

C.C. (cubic centimetres) used for Gms. (Grammes) causes an error of 5 per cent. (excess).

A teaspoonful is usually 5 Gms.; a tablespoonful 20 Gms.

THERAPEUTIC SUGGESTIONS;

OR,

INDEX OF DISEASES

REFERRED TO IN THIS WORK.

ABSCESSES
  alcohol, 128
  belladonna, 176
  cantharidal collodion, 242
  carbolic acid, 97
  cod-liver oil, 339
  flaxseed poultice, 323
  ice, 158
  iodine, 310
  sulphide of lime, 191
  yeast, 271
ACNE FACIEI
  sulphur, 423
ACUTE MANIA
  belladonna, 176
  bromide of potassium, 386
  chloral, 211
  conium, 247
  dulcamara, 263
  hyoscyamus, 305
  Indian hemp, 196
  opium, 350
ACUTE RHEUMATISM
  arnica, 163
AFTER-PAINS (see Labor)
AGUE
  apiol, 467
  arsenic, 167
  chinolin, 237
  dogwood, 252
  eucalyptus, 456
  nectrandra, 334
  quinia, 232
  salicin, 470
AGUE-CAKE (see Spleen, enlarged)
ALBUMINURIA
  arsenic, 170
  benzoate of calcium, 184
  (See also Bright's disease)
ALCOHOLISM
  stopping supplies, 129
  tincture of capsicum, 201
AMAUROSIS
  strychnia, 336
AMENORRHŒA
  aloes, 138
  apiol, 467
  cantharides, 200
  catnep, 206
  cimicifuga, 226
  cotton-root bark, 288
  ergot, 267
  hedeoma, 291
  hellebore, 291
  hiera picra, 195
  iron, 274
  marjoram, 358
  myrrh, 333
  pennyroyal, 291
  rue, 399
  savin, 401
ANÆMIA
  cod-liver oil, 340
  iron, 274
  phosphorus, 360
  solution of dialyzed iron, 463
  (See also Leucocythæmia)
ANEURISM
  ergotine injections, 265
  iodide of potassium, 388

- Angina (see Sore throat)
- Angina pectoris
  - hypodermic injection of morphia, 356
  - nitrite of amyl, 447
  - nitro-glycerin, 464
  - opium, 352
- Animal-poisoning (see Poisoning)
- Aphthous sore-mouth
  - borax, 416
  - chlorate of potassium, 380
  - hyposulphite of sodium, 418
  - sulphurous acid, 115
- Apoplexy
  - croton oil, 346
- Arsenical poisoning (see Poisoning)
  - dialyzed iron, 165
- Ascarides (see Worms)
- Ascites (see Dropsy)
- Asthma
  - æther, 125
  - antimony, 152
  - arsenic, 167
  - atropia, 180
  - belladonna, 180, 183
  - chloral, 211
  - chloroform, 219
  - cod-liver oil, 340
  - ether, 125
  - eucalyptus globulus, 456
  - ipecacuanha, 311
  - lobelia, 324
  - nitre papers, 382
  - nitrite of amyl, 447
  - nitro-glycerin, 464
  - opium, 352
  - pepsin, 466
  - pilocarpin, 461
  - quebracho, 469
  - stramonium, 422
  - tobacco-smoking, 427
  - turpentine stupes, 429
- Atheroma
  - digitalis, 259

- BILIARY COLIC (see Gall-stones)
- Biliousness
  - acids, 56
  - blue pill, 298
  - ipecacuanha, 313
  - nitro-muriatic acid, 110
  - taraxcum, 428
  - (See Hepatic disorders)
- Bites
  - caustic potassa, 379
  - excision, etc., 478
  - nitrate of silver, 161
  - (See also Poisoning)
- Bladder affections (see Cystitis)
- Boils (see Abscesses)
- Bowel affections (see Diarrhœa and Constipation)
- Brain-affections
  - blisters, 199
  - bromide of potassium, 384
  - croton oil, 346
  - iodide of potassium, 388
  - (See also Meningitis and Syphilis)
- Brain-softening
  - phosphorus, 360
  - zinc phosphide, 363
- Bright's disease
  - alkalies, 381
  - arsenic, 170
  - benzoate of calcium, 184
  - compound jalap powder, 316
  - cream of tartar, 383
  - diaphoretics, 71
  - ergot, 266
  - gallic acid, 280
  - iron, 275
  - jaborandi, 459
  - pilocarpin, 461
  - pipsissewa, 209
  - potash salts, 381
  - scoparius, 411
  - water, 159
- Bromide-acne
  - arsenic, 387
- Bronchitis
  - æther, 125
  - ammonia, 144, 145, 147
  - ammoniac, 141
  - antimony, 152
  - arsenic, 167
  - assafœtida, 172
  - balsam of Peru, 174

Bronchitis—
  balsam of Tolu, 174
  benzoin, 184
  carbolic acid inhalations, 100
  chloride of ammonium, 144
  cod-liver oil, 338
  copaiba, 249
  corrosive sublimate, 297
  digitalis, 260
  eucalyptus, 436
  garlic, 137
  hydriodic acid, 390
  iodide of potassium, 390
  ipecacuanha, 312
  licorice mixture, 288
  linseed tea, 322
  lobelia, 324
  mist. glycyrrhizæ comp. 288
  mustard plasters, 415
  myrrh, 333
  oil of amber, 344
  opium, 352
  phosphoric acid, 112
  seneka, 412
  squill, 410
  steam, 158
  sulphur, 423
  tar, 370
  tartar emetic, 37
  turpentine, 429
  turpentine stupes, 429
  wild-cherry bark, 394
Bronchocele (see Goitre)
Broncho-pneumonia
  antimony, 152
  (See Bronchitis and Pneumonia)
Bubo
  ice, 158
  (See also Abscesses)
Burns
  bicarbonate of soda, 467
  carbolic acid, 97
  carbonate of lead, 372
  carbonate of soda, 418
  carron oil, 190, 322
  collodion, 289
  cosmoline, 467
  cotton, 289
  warm-bath, 158

CALCULUS (phosphatic)
  nitric acid injections, 110
  potassa, 381
  (See also Gravel)
Cancer
  acetic acid, 95
  arsenic, 167
  blood-root, 403
  chloride of zinc, 438
  chloroform, 221
  citric acid, 101
  iodoform, 310
  opium, 351
Cancrum oris
  nitric acid, 110
Cardiac disease (see Heart disease)
Cardiac dropsy (see Dropsy)
Cardiac palpitation (see Heart disease)
  quebracho, 469
Caries
  cod-liver oil, 340
  sulphuric acid, 114
Catarrh (chronic)
  assafœtida, 172
  ipecacuanha, 313
  (See also Bronchitis and Coryza)
Cerebral disorders (see Brain affections)
Chafing (see Excoriation)
Chancre (see Syphilis)
Chapped hands
  collodion, 289
  glycerine, 287
Chilblains
  tr. iodine, 309
Chill (see Ague)
  alcohol, 132
Chills and fever (see Ague)
Chloasma
  sulphurous acid, 114
  (see also Skin diseases)
Chlorosis
  iron, 274
  solution of dialyzed iron, 463
  (see also Anæmia)
Cholera
  cajuput oil, 189
  camphor, 194
  cold affusions, 157

CHOLERA—
  hypodermic injections of morphia, 357
  nitrite of amyl, 448
CHOLERA INFANTUM (see Diarrhœa)
CHOLERA MORBUS
  acetate of lead, 374
  opium, 353
  sulphuric acid, 114
  (see also Diarrhœa)
CHORDEE
  camphor, 194
CHOREA
  æther, 125
  arsenic, 167
  belladonna, 182
  bromide of iron, 273
  bromide of potassium, 385
  chloral, 210
  chloroform, 221
  cimicifuga, 226
  cold affusion, 159
  conium, 245
  copper, 255
  ether-spray, 125
  iron, 273
  manganesium sulphate, 328
  oxide of zinc, 439
  physostigma, 365
  sulphate of zinc, 439
CHRONIC MANIA
  cimicifuga, 226
  cod-liver oil, 339
  ergot, 265
  hemlock, 246
CHRONIC NEPHRITIS (see Bright's disease)
CINCHONISM
  hydrobromic acid, 33
CIRRHOSIS OF KIDNEYS
  chloride of gold and sodium, 459
CIRRHOSIS OF LIVER
  chloride of gold and sodium, 459
COLDS (see Coryza)
COLIC
  assafœtida, 172
  belladonna, 180
  cajuput oil, 189
  catnep, 206
  chloroform, 220
  cloves, 204
COLIC—
  ether, 125
  fennel tea, 278
  flaxseed poultices, 322
  ginger, 440
  mustard, 415
  oleum monardæ, 331
  opium, 351
  pennyroyal, 291
  warm bath, 158
COLICA PICTONUM (see Painter's colic)
COLOR-BLINDNESS
  fuchsine, 457
  santonin, 405
CONDYLOMATA
  acid nitrate of mercury, 295
  black-wash, 296
  carbolic acid, 98
  chromic acid, 100
  (See also Syphilis)
CONGESTION OF BRAIN
  bromide of potassium, 385
  compound jalap powder, 316
  croton oil, 345
  elaterium, 264
CONGESTION OF SPINAL CORD
  belladonna, 178
  ergot, 265
CONJUNCTIVITIS
  alum, 140
  lard, 123
  silver nitrate, 161
  zinc sulphate, 439
CONSTIPATION
  aloes, 138
  alum, 140
  assafœtida, 172
  belladonna, 180
  castor oil, 343
  colocynth, 244
  confection of senna, 205
  croton oil, 346
  elaterium, 264
  gamboge, 281
  jalap, 316
  juglans, 317
  leptandra, 319
  magnesii sulph. 114
  nux vomica, 335
  physostigma, 366
  picrotoxin, 453

CONSTIPATION—
podophyllum, 375
sambucus, 403
seidlitz powders, 419
senna, 413
strychnia, 335
sulphur, 424
taraxacum, 428
CONSUMPTION (see Phthisis)
CONTUSIONS
vinegar, 94
CONVULSIONS, EPILEPTIC (see Epilepsy)
CONVULSIONS, HYSTERICAL (see Hysteria)
CONVULSIONS, INFANTILE
assafœtida, 172
bromide of potassium, 385
chloral, 211
chloroform, 220
conia, 245
ether, 123
garlic, 137
hemlock, 245
mustard baths, 415
oil of amber, 344
warm bath, 158
CONVULSIONS, PUERPERAL
chloral, 210
chloroform, 221
veratrum viride, 436
CONVULSIONS, URÆMIC (see Uræmic coma)
CORNS
acetic acid, 95
(See Warts)
CORYZA
aconite, 121
alcohol, 131
assafœtida, 172
bismuth, 185
boneset tea, 269
camphor, 193
creasote, 252
cubebs, 253
Dover's powder, 311
glycerite of tannin, 280
horehound, 329
licorice, 288
opium, 352
COUGH
belladonna, 182
COUGH—
chloroform, 219
gelsemium, 285
hydrocyanic acid, 106
opium, 352
oxalate of cerium, 207
CRACKED NIPPLES
benzoin, 184
collodion, 289
tannic acid, 116
CROUP, PSEUDO-MEMBRANOUS
alum, 140
bromine, 388
chlorate of potash, 380
ipecacuanha, 313
lactic acid, 107
lime-water, 191
steam, 158
(See also Diphtheria, and Spasm of the larynx)
CROUP, SPASMODIC
alum, 140
antimony, 152
CYSTITIS
buchu, 187
copaiba, 249
cubebs, 253
hyoscyamus, 305
iron, 275
juniper, 317
pareira, 359
turpentine, 431
uva ursi, 434

DEBILITY
alcohol, 129
cod-liver oil, 340
gentian, 286
iron, 275
phosphorus, 359
quinia, 230
strychnia, 336
(See also Anæmia)
DELIRIUM TREMENS
antimony, 152
arnica, 163
bromide of potassium, 385
chloral, 210, 214
digitalis, 258
hyoscyamia, 305
lupulin, 292

DELIRIUM TREMENS—
  musk, 332
  opium, 349
  veratrum viride, 436
DIABETES
  almonds, 148
  bromide of potassium, 386
  codeia, 357
  glycerine, 287
  opium, 353
  phosphoric acid, 112
  yeast, 271
DIABETES INSIPIDUS
  ergot, 266
  jaborandi, 459
DIARRHŒA
  acetate of lead, 373
  acids, 58
  alum, 140
  arsenic, 168
  bismuth, 186
  blackberry, 399
  cajuput oil, 189
  camphor, 194
  Castillon's powders, 431
  castor oil, 343
  catechu, 206
  chalk, 190
  cinnamon, 239
  copper, 255
  corrosive sublimate, 298
  ergot, 266
  geranium, 286
  gum arabic, 94
  ipecacuanha, 314
  kino, 318
  krameria, 318
  licorice, 288
  lime-water, 190
  logwood, 290
  nitrate of iron, 275
  opium, 352
  ox-bile, 457
  oxide of zinc, 439
  pepsin, 466
  podophyllum, 375
  resin, 396
  rhubarb, 398
  statice, 420
  sulphuric acid, 114
  tannic acid, 280
  testa præparata, 431
DIARRHŒA—
  turpentine, 430
DIPHTHERIA AND DIPHTHERITIC CROUP
  ammonia, 144
  carbolic acid, 98
  chlorate of potassium, 383
  chlorine water, 217
  chromic acid, 100
  citric acid, 101
  ipecacuanha, 312
  lactic acid, 107
  lime inhalations, 190
  muriatic acid, 108
  tincture of iron, 275
  turpentine, 430
DIPHTHERITIC PARALYSIS
  strychnia, 336
  tartar emetic, 152
DISLOCATIONS
  chloroform, 221
  hemlock, 246
DRINK-CRAVING
  tincture of capsicum, 201
DROPSY
  blisters, 199
  citrate of caffein, 188
  comp. jalap powder, 316
  copaiba, 250
  cream of tartar, 381
  digitalis, 261
  elaterium, 264
  erigeron, 269
  gamboge, 281
  juniper, 317
  pilocarpin, 461
  potash salts, 381
  scammony, 409
  scoparius, 411
  squill, 410
  spirits of nitre, 136
DYSENTERY
  camphor, 194
  ergot, 266
  gum arabic, 94
  Indian bael, 450
  ipecacuanha, 314
  opium, 352
  rhatany, 318
DYSMENORRHŒA
  chloride of gold, 460

Dyspepsia
acids, 56
aloes, 138
arsenic, 168
assafœtida, 172
belladonna, 182
bismuth, 185
bromide of potassium, 386
carbolic acid, 100
chamomile, 149
charcoal, 202
columbo, 192
emetics, 74
gentian, 286
gold, 459
hydrastus, 304
hydrocyanic acid, 104, 106
lactic acid, 107
lime-water, 191
magnesia, 326
muriatic acid, 108
nux vomica, 337
ox-bile, 457
pepsin, 465
picrotoxin, 453
quassia, 395
quebracho tincture, 468
quinia, 230
rhubarb, 397
senna, 413
soda, 419
soda-mint, 419
sulphate of manganese, 328
sulphurous acid, 115
taraxacum, 428
thoroughwort, 269

EAR DISCHARGES
boracic acid, 441
Eczema
arsenic, 169
bicarbonate of potassium, 379
chloral, 209
glycerite of tannic acid, 281
hydrocyanic acid, 103
lead-water, 372
phosphorus, 361
soda, 418
spiritus saponis kalinis, 407
thymol, 471
(See also Skin diseases)

Emphysema
quebracho, 469
Empyema
tr. iodine, 309
Epilepsy
belladonna, 182
bromide of ammonium, 147
bromide of potassium, 384, 387
Calabar bean, 365
copper, 255
nitrite of amyl, 446
nitro-glycerin, 464
picrotoxin, 453
silver, 162
Epistaxis
ergot, 265
iron, 272
(See Hemorrhage)
Erysipelas
aconite, 120
collodion, 242, 289
elm-poultice, 433
lead-water, 372
liquor gutta-percha, 290
nitrate of silver, 162
quinia, 229
sulphate of iron, 273
tincture of iron, 275
Excoriations
bismuth, 185
chalk, 190
lycopodium, 326
spermaceti cerate, 208
starch 148
(See Skin diseases)

FACIAL NEURALGIA
aconite, 119
gelsemium, 283
(See also Neuralgia)
Fainting (see Syncope)
Fatigue
alcohol, 129
coca leaves, 189
Favus
black-wash, 296
(See Skin diseases)
Felon
carbolic acid, 98
Fetid expectoration
creasote, 252

FETID EXPECTORATION—
  salicylic acid, 443
FETID PERSPIRATION
  ointment of boracic acid, 441
FEVER, INTERMITTENT (see Ague)
FEVERS
  acids, 57
  aconite, 120
  althea, 139
  baths, 157
  digitalis, 261
  effervescing draughts, 101
  gum arabic, 94
  liquor ammonii acetatis, 146
  quinia, 230
  salicylic acid, 443
  tartaric acid, 117
  vinegar, 94
FISSURE OF RECTUM
  belladonna, 176
FLATULENCE
  æther, 125
  carbolic acid, 100
  charcoal, 202
  cloves, 204
  fennel, 278
  oleum hedeoma, 291
  soda-mint, 419
  sulphurous acid, 115
  (See also Dyspepsia)
FLOODING, POST-PALTUM
  ergot, 267
  iron injections, 272
  (See also Hæmorrhage)

GALL-STONES
  belladonna, 182
  chloroform, 221
  hypodermic injections of morphia, 357
  opium, 351
  warm bath, 158
GASTRALGIA
  blisters, 199
  manganesium sulphate, 327
  silver nitrate, 162
  (See also Colic)
GASTRO ENTERIC INFLAMMATION
  gum arabic, 94
  (See also Diarrhœa and Dysentery)
GLEET
  copper sulphate, 255
  iron, 275
  styrax, 422
  turpentine, 431
  (See also Gonorrhœa)
GOITRE
  biniodide of mercury, 296
  tincture of iodine, 309
GONORRHŒA
  alum, 140
  aluminii sulphas, 141
  bismuth, 185
  buchu, 187
  copaiba, 249
  cubebs, 253
  fluid extract of matico. 329
  hydrastis canadensis, 304
  infusion of pomegranate, 394
  silver nitrate, 161
  styrax, 422
  sulphate of copper, 255
  sulphate of zinc, 439
  tannic acid, 279
  turpentine, 430
GOUT
  colchicum, 240
  iodide of potassium, 390
  lithium, 323
  potash, 380
  salicylic acid, 443
GRANULAR LIDS
  sulphate of copper, 255
GRAVEL
  lithia, 323
  salicylate of soda, 443

HÆMATEMESIS
  gallic acid, 280
  (See also Hæmorrhage)
HÆMATURIA
  turpentine, 430
HÆMOPTYSIS
  acetate of lead, 373
  alum, 140
  atropia, 179
  digitalis, 259
  ergot, 266
  gallic acid, 280
HÆMORRHAGE
  acetate of lead, 373

HÆMORRHAGE—
  alum, 140
  collodion, 289
  digitalis, 259
  ergot, 265
  erigeron, oil of, 269
  ice, 158
  iron, 272
  matico, 329
  opium, 352
  tannic acid, 279
  turpentine, 430
  (See also Menorrhagia, etc.)
HÆMORRHOIDS
  belladonna, 176
  charcoal, 203
  ergot, 265
  glycerine, 287
  iodoform, 310
  ointment of galls, 280
  opium fomentations, 349
  nitric acid, 110
  pepper, 368
  stramonium, 422
  sulphur, 424
HAY-ASTHMA OR HAY-FEVER
  arsenic, 167
  quinia, 231
HEADACHE
  aconite, 119
  nitro-glycerine, 464
  podophyllum, 375
  tincture of nux vomica, 337
  valerian, 435
  valerianate of ammonia, 117, 435
  vinegar, 94
  (See also Neuralgia)
HEARTBURN
  magnesia, 326
  soda mint, 419
  (See also Dyspepsia)
HEART-CLOT
  ammonia, 144
HEART-DISEASE
  aconite, 120
  æther, 125
  belladonna, 178
  comp. jalap powder, 316
  digitalis, 258
  hydrocyanic acid, 104
  morphia, 352
HEART-DISEASE—
  potash-salts, 381
  scoparius, 411
  veratrum viride, 436
HEPATIC DISORDERS
  ammonii chloridum, 146
  blue pill, 298
  citric acid, 101
  ipecacuanha, 314
  leeches, 472
  nitric acid, 110
  nitro-muriatic acid, 111
  podophyllum, 375
  rhubarb, 397
  sodii bicarbonas, 418
HERNIA
  chloroform, 221
  hemlock, 246
  tartar emetic, 152
  warm bath, 158
HERPES ZOSTER
  collodion, 242
  (See Skin diseases)
HICCOUGH
  musk, 332
  oil of amber, 344
HYDROCELE
  tr. iodine, 309
HYDROPHOBIA
  woorara, 453
HYDROTHORAX
  pilocarpin, 462
  scoparius, 411
  (See also Pleurisy)
HYPERPYREXIA
  quinia, 230
  resorcin, 470
  salicylic acid, 443
HYPOCHONDRIASIS
  cimicifuga, 226
  (See Acute and Chronic mania)
HYSTERIA
  æther, 125
  assafœtida, 172
  catnep, 206
  chloroform, 219
  cloves, 204
  cold water, 151
  hemlock, 246
  musk, 332
  oil of amber, 344

Hysteria—
- valerian, 435
- valerianate of zinc, 117
- valerianates, 117

IMPACTION OF FECES
- seidlitz powders, 419
- (See Constipation)

Impetigo
- arsenic, 169
- (See Skin diseases)

Impotence
- phosphorus, 360

Incontinence of urine
- belladonna, 37, 180
- bromide of potassium, 385
- buchu, 188
- chloral, 211
- collodion, 242
- ergot, 266
- santonin, 406
- strychnia, 336

Indigestion
- ipecacuanha, 314
- (See Dyspepsia)

Infantile convulsions (see Convulsions, infantile)

Inflammations
- alcohol, 130

Insanity (see Acute and Chronic mania)

Insomnia
- aconitia, 123
- chloral, 210
- napeline, 123
- opium, 349

Intermittent fever (see Ague)

Intertrigo
- bismuth, 185
- (See Excoriation)

Intestinal obstruction
- (See Obstruction of bowels)

Iritis
- atropia, 177
- blisters, 198
- leeches, 472

Irritable heart (see Heart disease)

Irritable stomach (see Vomiting)

Itch (see Scabies)

JAUNDICE
- podophyllum, 375
- rhubarb, 397
- sanguinara, 403
- soda, 418
- (See also Hepatic disorder)

Joint-affections
- blisters, 198
- cod-liver oil, 340
- digitalis, 257
- iodine, 309
- oleate of mercury, 296

KIDNEY COMPLAINT
- comp. jalap powder, 316
- copaiba, 250
- digitalis, 261
- gallic acid, 280
- iron, 275
- pipsissewa, 209
- potash salts, 381
- (See also Bright's disease)

LABOR
- chloral, 211
- chloroform, 221
- cotton-root bark, 289
- ergot, 265
- opium, 351
- quinia, 228

Laryngismus stridulus (see Spasm of the larynx)

Leprosy
- copaiba, 249
- (See Skin diseases)

Leucocythemia
- phosphorus, 360
- (See also Anæmia)

Leucorrhœa
- alum, 140
- aluminii sulphas, 141
- bismuth, 185
- ergot, 267
- fluid extract matico, 329
- iron injections, 273
- lime-water, 190
- matico, 329
- sulphate of zinc, 439
- tannic acid, 279
- white-oak bark, 395

Lichen
- arsenic, 169
- (See Skin diseases)

Lithiasis
- boracic acid, 442

Liver disease (see Hepatic disorders)

Locomotor ataxia
- silver oxide, 162

Lumbago (see Myalgia)

Lumbricoids (see Worms)

Lupus
- arsenic, 167
- carbolic acid, 97
- copaiba, 249
- (See Skin diseases)

MALARIAL FEVERS
- (See Ague)

Mania (see Acute or Chronic mania)
- arnica, 163

Mastitis
- belladonna, 181

Mastodynia
- belladonna, 181

Measles
- phosphorus, 361

Meningitis
- blisters, 199
- ice, 158
- opium, 350

Menorrhagia
- atropia, 179
- bromide of potassium, 386
- cinnamon, 239
- digitalis, 259, 262
- ergot, 265
- erigeron, 269
- gallic acid, 280
- oil of erigeron, 269
- oxide of silver, 162
- (See also Hæmorrhage)

Mental failure
- chloride of gold, 459

Migraine (see Neuralgia)

Mitral disease (see Heart disease)

Myalgia
- ammonium chloride, 144
- atropia injections, 182

Myalgia—
- boneset tea, 269
- chloroform, 219
- cimicifuga, 226
- gelsemium, 283
- morphia injections, 356
- mustard plasters, 415

Myelitis, chronic
- belladonna, 181

NARCOTIC POISONING
- blisters, 198
- (See also Poisoning)

Necrosis
- sulphuric acid, 114

Nervous debility
- iron, 273
- phosphorus, 359
- strychnia, 336
- (See also Debility)

Nervous headache
- citrate of caffein, 188
- Indian hemp, 196
- valerian, 435
- valerianate of ammonia, 435
- (See also Headache)

Nervous insomnia
- chloral, 210
- musk, 332
- (See also Insomnia)

Nervousness
- assafœtida, 172
- camphor, 193
- valerianates, 136
- (See Hysteria)

Neuralgia
- aconite, 120, 122
- aconitine, 128
- æther, 125
- alcohol, 129
- ammonium chloride, 144, 147
- apiol, 467
- arsenic, 167
- belladonna, 176
- blisters, 198
- cannabis Indica, 196
- chloral, 209
- chloral-camphor, 215
- chloroform, 219
- cochineal, 239
- cod-liver oil, 339

Neuralgia—
croton-chloral, 216
gelsemium, 283
guarana, 189
hydrocyanic acid, 103
hypodermic injections of morphia, 356
Indian hemp, 196
iodoform, 310
iron, 273
mustard-plaster, 415
napeline, 123
nitrite of amyl, 447
oil of peppermint, 331
opium, 351
phosphide of zinc and nux vomica, 363
quinia, 230
salicin, 470
turpentine stupes, 430
valerianate of quinia, 117
veratria ointment, 400
(See also Headache, Toothache, Myalgia, and Pleurodynia)
Night sweats
acetic acid, 95
atropia, 181
ergot, 265
oxide of zinc, 439
quinia, 231
sulphuric acid, 114
Nipples, sore (see Cracked nipples)

OBSTRUCTION OF BOWELS
acetate of lead, 374
belladonna, 180
Œdema (see Dropsy)
Œdema of glottis
chromic acid, 100
Onychia maligna
nitrate of lead, 372
Ophthalmia (see Conjunctivitis)
Opium habit
avena, 173
Orchitis
ice, 158
leeches, 472
Otorrhœa
glycerite of tannic acid, 280
Oxyuris vermicularis (see Worms)
Ozæna
creasote, 252
glycerite of tannic acid, 280
potassium permanganate, 379
(See also Coryza)

PAINTERS' COLIC
alum, 140
belladonna, 180
chloroform, 219
Epsom salt, 326
iodide of potassium, 390
sulphuric acid, 114
Palpitation of the heart
belladonna, 178
chloroform, 219
digitalis, 258
opium, 352
(See also Heart disease)
Paralysis
ergot, 265
strychnia, 336
Paralysis agitans
hemlock, 246
Paraplegia (see Paralysis)
Parturition (see Labor)
Pediculi
black wash, 296
Pemphigus
arsenic, 169
Pericarditis
blisters, 199
leeches, 472
mercury, 299
Periostitis
iodide of potassium, 389
Peritonitis
aconite, 120
blisters, 199
flaxseed poultices, 322
leeches, 472
mustard, 415
opium, 351
turpentine stupes, 429
Phagedæna
chromic acid, 100
iron, 273
nitric acid, 110

Phagedæna—
quinia, 229
Phthisis
arsenic, 167
chloral, 210
cod-liver oil, 340
hypophosphite of lime, 191
lactucarium, 319
opium, 352
oxalic acid, 112
wild-cherry bark, 394
Phthisis, cough
codeia, 357
picrotoxine, 452
Phthisis, diarrhœa
quebracho tincture, 468
Phthisis, fever
salicin, 470
Phthisis, sweating
muscarin, 464
(See also Night-sweats)
Pityriasis capitis
chloral, 210
calomel ointment, 299
Pleurisy
aconite, 120
blisters, 198
leeches, 472
mustard, 415
pilocarpin, 461
turpentine stupes, 429
Pleurodynia
blisters, 198
iodine, 309
mustard, 415
(See also Neuralgia)
Pneumonia
aconite, 120
ammonia, 144, 145
antimony, 152, 154
blisters, 199
diaphoretics, 70
flaxseed poultices, 322
iodine, 309
mercury, 299
mustard, 415
opium, 351
quinia, 229
senega, 412
turpentine stupes, 429
veratrum viride, 437
Podagra (see Gout)
Polypi, uterine
ergot, 267
(See also Menorrhagia)
Polyuria (see Diabetes insipidus)
Post-partum hemorrhage
iron, 272
iodine (see also Hemorrhage)
Priapism
bromide of potassium, 386
camphor, 193
Prolapsus ani
bismuth, 185
Pruritus
calomel ointment, 299
chloral-camphor, 215
hydrocyanic acid, 103, 106
soda, 418
tobacco, 426
(See also Skin diseases)
Psoriasis
antimony, 153
arsenic, 169
cantharides, 200
chrysophanic acid, 458
copaiba, 249
Goa powder, 458
phosphorus, 361
tar ointment, 370
thymol, 471
Puerperal convulsions (see Convulsions)
Pulmonary complaints
Iceland moss, 208
(See Phthisis, Pneumonia, and Pleurisy)
Purpura
arsenic, 169
ergot, 265
turpentine, 429
(See also Scurvy)
Pyæmia
alcohol, 131
quinia, 229
Pyelitis
cantharides, 200
turpentine, 429
Pyrosis
bismuth, 186
magnesia, 326
manganesium sulphate, 328

Pyrosis—
soda mint, 419
sulphurous acid, 115
(See also Dyspepsia)

QUINSY (see Tonsillitis)

RACHITIS
cod-liver oil, 340
iron, 274
lacto-phosphate of lime, 191
phosphoric acid, 112
phosphorus, 362
Renal calculus
chloroform, 221
opium, 352
warm bath, 158
(See also Calculus)
Rheumatism
aconite, 120
arsenic, 169
baths, 157
belladonna, 176, 182
blisters, 199
bromide of ammonium, 144
chloral, 210
cimicifuga, 226
citric acid, 101
cod-liver oil, 342
cotton-wadding, 289
Dover's powder, 315
guaiac, 290
iodide of potassium, 390
iron, 275
lemon-juice, 321
oil of cajuput, 189
oil of monarda, 331
pilocarpin, 461
pipsissewa, 209
potassium salts, 380
quinia, 229
salicin, 470
salicylic acid, 442
sulphur, 423
trimethylamine, 471
(See also Myalgia)
Rheumatoid arthritis
arsenic, 169
guaiac, 290
Rickets (see Rachitis)
Ringworm
acetic acid, 95
croton oil, 346
thymol, 471
(See also Skin diseases)
Rupture of bladder
opium, 351
Rupture of intestine
opium, 351
Rupture of uterus
opium, 351

SALIVATION
belladonna, 180
chlorate of potash, 380
Sarcinous vomiting
carbolic acid, 100
eucalyptus, 456
hyposulphite of soda, 418
sulphurous acid, 115
(See also Vomiting)
Scabies
arsenic, 169
storax, 422
sulphur ointment, 423
Scarlet fever
aconite, 120
ammonii carbonas, 146
belladonna, 182
chlorate of potassium, 380
chlorine water, 218
phosphorus, 361
quinia, 229
Sciatica
atropia injections, 182
blisters, 198
hypodermic injections of morphia, 357
mustard, 415
opium, 351
turpentine enema, 430
(See also Neuralgia)
Scorbutus (see Scurvy)
Scrofula
barium chloride, 174
calcium chloride, 191
cod-liver oil, 341
comp. tinct. of iodine, 309
iodine, 309
iron, 274

SCROFULA—
  phosphoric acid, 112
  pipsissewa, 209
  stillingia, 421
SCURVY
  chromic acid, 100
  citric acid, 101
  lemon-juice, 320
  oxalic acid, 112
  vinegar and nitre, 94
SEA-SICKNESS
  bromide of potassium, 386
  chloral, 211
  chloroform, 219
SICK-HEADACHE (see Headache)
SEMINAL EMISSIONS
  belladonna, 177
SKIN DISEASES
  acetic acid, 95
  antimony, 153
  arsenic, 169
  bismuth, 185
  black-wash, 296
  cadmium salts, 188
  carbolic acid, 97
  chloral, 209
  chloroform, 219
  chrysophanic acid, 458
  cod-liver oil, 342
  collodion, 242
  copaiba, 248
  creasote, 252
  dulcamara, 263
  Goa powder, 458
  hydrocyanic acid, 103
  hyposulphite of soda, 418
  iodine, 309
  lycopodium, 326
  mercurial ointment, 296
  nitrate of lead, 372
  oxide of zinc ointment, 438
  phosphorus, 361
  sapo viridis, 407
  soda, carbonate of, 418
  starch, 148
  stillingia, 421
  sulphur baths, 423
  sulphurous acid, 115
  tar ointment, 370
  thymol, 471
  warm bath, 158
  (See Acne faciei, Eczema, Erysipelas, Excoriations, Favus, Herpes zoster, Impetigo, Leprosy, Lichen, Lupus, Onychia maligna, Pemphigus, Prurigo, Psoriasis, Ringworm, Scabies, Smallpox, and Tinea Tonsurans)
SKIN DISEASES, CHRONIC
  jaborandi, 461
SLOUGHING
  nitric acid, 110
SMALLPOX
  alcohol, 131
  quinia, 231
SMALLPOX PITTING
  collodion, 242
  liquor gutta perchæ, 290
  mercurial ointment, 296
  silver nitrate, 161
SNAKE-BITE
  ammonia, 143, 146
SORE THROAT
  alum, 140
  chlorate of potash, 383
  compound infusion of roses, 398
  corrosive sublimate, 296
  glycerite of tannic acid, 280
  gum arabic, 94
  iodoform, 310
  iron, 273
  myrrh, 333
  rosemary, 420
  sage tea, 402
  tannic acid, 280
  (See also Tonsillitis)
SPASM OF THE LARYNX
  antimony, 152
  bromide of potassium, 385
  cold affusions, 157
  compound syrup of squill, 410
  conium, 246
SPASMODIC STRICTURE
  (See Stricture)
SPINAL SCLEROSIS
  nitrate of silver, 162
SPLEEN, ENLARGED
  conium, 246
  fluid extract of ergot, 266
  opium, 351
  quinia, 232

Sprains and bruises
  laudanum, 349
  lead-water, 372
  vinegar, 94
Stings of insects
  ammonia, 143
Stomatitis
  bismuth, 185
  chromic acid, 100
Stone in the bladder (see Calculus)
Stricture, spasmodic
  hemlock, 246
  iron, 274
  opium, 351
  warm bath, 158
Struma (see Scrofula)
Stupor (see Uræmic coma and Narcotic poisoning)
Suffocative catarrh (see Bronchitis)
Summer complaint (see Diarrhœa)
Sunburn
  vinegar, 94
Sunstroke
  cinchona, 230
Suppurating glands (see Scrofula)
Sweating
  acids, 56
  alum, 140
  atropia, 181
  belladonna, 176
Sweating of phthisis (see Night-sweats)
Syncope
  ammonia, 143
Syphilis
  bichromate of potassium, 384
  black-wash, 296
  chromic acid, 100
  cod-liver oil, 342
  corrosive-sublimate injections, 302
  guaiac, 290
  iodide of potassium, 390
  iron, 273
  mercury, 297, 299
  nitric acid, 110
  sarsaparilla, 356
  stillingia, 421
Syphilis—
  Zittmann's decoction, 304
Syphilitic brain-disease
  mercury, 299
Syphilitic sore-throat
  black-wash, 299
  corrosive sublimate gargle, 302
  silver nitrate, 161
  sulphate of copper, 254
Syphilitic ulcer
  acid nitrate of mercury, 296
  iodoform, 310
  nitrate of silver, 161
  sulphate of copper, 254
  sulphuric acid, 114

TÆNIA (see Worms)
Tapeworm (see Worms)
  pelletiérine, 394
Tetanus
  bromide of potassium, 385
  cannabis Indica, 196
  chloral, 211
  conium, 246
  curare, 453
  eserine, 367
  gelsemium, 284
  nitrite of amyl, 416
  physostigma, 365
  tobacco, 426
  woorara, 453
Tinea tonsurans
  black-wash, 296
  carbolic acid, 98
  iodine, 309
  sulphurous acid, 115
  (See also Skin diseases)
Tinea versicolor
  sulphurous acid, 115
Tinea circinata
  Goa powder, 458
Tonsillitis
  aconite, 120
  capsicum-gargle, 201
  steam, 158
Tonsils, enlarged
  chromic acid, 101
Toothache
  atropia, 182
  cajuput oil, 189
  creasote, 252

- Toothache—
  - oil of cloves, 204
- Torticollis
  - conium, 246
- Trismus
  - hemlock, 246
  - (See also Tetanus)
- Trismus nascentium
  - chloral, 211
- Tympanitis
  - assafœtida, 172
  - turpentine, 430
- Typhoid condition
  - alcohol, 131
  - ammonia, 145
  - phosphorus, 360
- Typhoid fever
  - alcohol, 131
  - ammonia, 145
  - digitalis, 260
  - ergot, 265
  - muriatic acid, 108
  - opium, 349
  - quinia, 229
  - turpentine, 430
  - veratrum viride, 437
- Typhus
  - alcohol, 131
  - antimony, 151, 154
  - blisters, 198
  - chloral, 210
  - chlorine-water, 218
  - opium, 349
  - quinia, 229

- ULCERATED SURFACES
  - bismuth, 195
  - carbolic acid, 97
  - silver nitrate, 161
- Ulcers
  - acid nitrate of mercury, 296
  - carbolic acid, 97
  - charcoal poultices, 202
  - chromic acid, 100
  - copper sulphate, 254
  - iodoform, 310
  - nitrate of silver, 161
  - potassium permanganate, 379
  - yeast poultice, 271
- Uræmic coma
  - cathartics, 81
- Uræmic coma—
  - croton oil, 343
  - diaphoretics, 71
  - diuretics, 72
  - mustard poultices, 416
- Uterine cancer
  - iodoform, 310
  - (See Cancer)
- Uterine polypi
  - ergot, 267

- VARICOSE VEINS
  - ergot, 266
- Vesical catarrh
  - buchu, 187
  - (See Cystitis)
- Vesical irritations
  - benzoin, 184
  - hyoscyamus, 305
  - pareira, 359
- Vesical irritability
  - iron, 275
  - sodium bicarbonate, 418
  - (See Calculus)
- Vomiting
  - arsenic, 169
  - bismuth, 185
  - carbolic acid, 100
  - creasote, 252
  - dilute hydrocyanic acid, 104
  - ice, 158
- Vomiting, persistent
  - calomel, 36, 297
  - chloroform, 219
  - effervescing draught, 101
  - gray powder, 36, 297
  - ice, 158
  - ipecacuanha, 36, 312
  - seidlitz powders, 419
  - (See also Sarcinous vomiting)
- Vomiting of pregnancy
  - aconite, 121
  - bromide of potassium, 386
  - ingluvin, 458
  - ipecacuanha, 36, 312
  - oxalate of cerium, 207
  - tincture of nux vomica, 337

- WARTS
  - acetic acid, 95

WARTS—
  bichromate of potassium, 383
  chromic acid, 100
  nitric acid, 110
  silver nitrate, 161
WHOOPING-COUGH
  alum, 140
  antimony, 152
  assafœtida, 172
  belladonna, 181
  bromide of ammonium, 147
  bromide of potassium, 385
  camphor, 194
  carbolic acid, 100
  chloral, 210
  chloroform, 219
  cochineal, 239
  cod-liver oil, 339
  ergot, 266
  hydrocyanic acid, 104
  oil of amber, 344
  quinia, 230
  squill, 410
WINTER-COUGH
  (See Bronchitis)
WORMS (for general remarks on Anthelmintics see page 59)
  Ascaris lumbricoides (Round worms)
    azedarach, 450
WORMS—
    oil of worm-seed, 208
    santonin, 405
    scammony, 409
    spigelia, 419
    turpentine, 430
  Oxyuris vermicularis (Seat-worms)
    enemata of iron, 273
    enemata of lime-water, 190
    enemata of quassia, 395
    enemata of vinegar, 94
  Tænia (Tape-worms)
    carbolic acid, 100
    filix mas, 278
    infusion of pomegranate, 394
    kamala, 470
    kousso, 450
    pelletiérine, 394
    pumpkin seeds, 359
    rottlera, 470
    turpentine, 430
  Trichina spiralis
    general treatment, 60
WRIST-DROP
  strychnia, 386
  (See Lead-poisoning)
WRY-NECK
  hemlock, 246
  (See Myalgia)

GENERAL INDEX.

ABSINTHE, 93
  Absinthium, 93
Acacia, 93
Accumulation of arsenic, 170
  of digitalis, 262
  of medicine, 41
  of strychnia, 337
Aceta, 96
Acetic acid, 94
Acetum, 94
  destillatum, 94
  lobeliæ, 324
  opii, 347
  sanguinariæ, 403
  scillæ, 409
Acida, 117
Acid, chrysophanic, 458
Acids in biliary derangement, 57
  disadvantages of, 58
  effect on circulation, 55
  effects on secretion, 56
  effects on temperature, 56
  effects on the urine, 57
  external effects, 55
  internal effects, 55
  officinal, 117
  poisonous effects of, 58
  remarks on, 55
  stimulating alkaline secretions, 57
Acidum aceticum, 94
  aceticum dilutum, 94
  arseniosum, 96, 164
  benzoicum, 184
  boracicum, 441
  carbolicum, 96
    impurum, 96
  chromicum, 100
  citricum, 101
  gallicum, 279
  hydrocyanicum dilutum, 102
  lacticum, 107
Acidum—
  muriaticum, 107
    dilutum, 107
  nitricum, 109
    dilutum, 109
  nitro-muriaticum, 110
    dilutum, 110
  oxalicum, 111
  phosphoricum dilutum, 112
    glaciale, 112
  salicylicum, 442
  sulphuricum, 112
    aromaticum, 112
    dilutum, 112
  sulphurosum, 115
  tannicum, 115, 279
  tartaricum, 116
  valerianicum, 117
Acne from bromides, 387
  prevented by arsenic, 33
Aconite, 118
  in fever, 36, 118
  leaves, 118
  root, 118
Aconitia, 118
Aconiti folia, 118
  radix, 118
Aconitum, 118
Action of drugs changed with dose, 36
Adeps, 123
Administration, forms of, 28, 34
  of aconite, 122
  of antimony, 154
  of opium, 356
  of purgatives, 80
  of quinia, 234
Æther, 124
  fortior, 124
Æthera, 127
Alcohol, 127
  amylicum, 136

Alcohol—
  dilutum, 127
  fortius, 127
Alcohol as food, 133–134
  amount of, in liquors, 135
Alkaloids in cinchona, 236
Allium, 136
Allspice, 368
Almond, 147
  as food in diabetes, 148
  mixture, 147
Aloe, 137
  Barbadensis, 137
  Capensis, 137
  compound decoction of, 139
  purificata, 137
  Socotrina, 137
Aloes, 137
Althæa, 139
Alum, 139
Alumen, 139, 141
  exsiccatum, 135
Aluminii et potassii sulphas, 141
  sulphas, 141
Amber, 344
Amblyopia from tobacco, 426
American hellebore, 435
  leeches, 472
  pennyroyal, 291
Ammonia, 141
Ammoniac, 141
Ammoniacum, 141
Ammoniated copper, 253
  mercury, 142
Ammonii benzoas, 142, 184
  bromidum, 142, 186
  carbonas, 142
  chloridum, 142
  chloridum purificatum, 142
  iodidum, 142
  nitras, 142
  salicylas, 442
  sulphas, 142
  valerianas, 117, 136
Ammonio-ferric alum, 142
Ammonio-tartrate of iron, 142
Amygdala, 147
Amygdala amara, 147
  dulcis, 147
Amyl nitris, 445
Amylic alcohol, 136
Amylum, 148
Anæsthesia by chloroform, 220
  by chloral, 210
  by ether, 126
  by ethidene, 451
  by ethyl bromide, 451
  by nitrous oxide gas, 465
Anæsthetic, local, 97
Anæsthetics, 58
  choice of, 58
Angustura, 148
Anise, 149
Anise-seed, 149
Anisum, 149
Anthelmintics, 59
  how to give, 36, 61
Anthemis, 149
Antidote, acetic acid, 95
  aconite, 118
  alcohol, 128
  ammonia, 143
  arsenious acid, 165
  barium, 174
  belladonna, 175
  bitter almond, 148
  bromine, 187
  camphor, 193
  carbolic acid, 97
  chemical, 62
  chloral, 212
  conia, 245
  copper, 254
  corrosive poisoning, 295
  corrosive sublimate, 295
  digitalis, 257
  Fowler's solution, 165
  general, for poisons, 472
  hydrocyanic acid, 102, 105
  iodine, 308
  lead, 371
  lobelia, 324
  muriatic acid, 108
  nitrate of silver, 161
  nitric acid, 109
  oil of bitter almonds, 148
  opium, 348
  oxalic acid, 111
  phosphorus, 359
  physiological, 62
  physostigma, 364
  potassa, 378
  stramonium, 421
  strychnia, 335

Antidote—
  sulphuric acid, 113
  tartar emetic, 151
  tartaric acid, 116
  tobacco, 425
  veratria, 400
  zinc, 438
Antidotes, theory of, 61
Antimonial powder, 153
  wine, 153
Antimonii et potassii tartras, 149
  et potassi tartras, toleration of, 40
  oxidum, 149
  oxysulphuretum, 150
  sulphuretum, 149
Antimonium, 149
  sulphuratum, 150
Antimony, 149
Antipyretics and refrigerants, 63
Antiseptic system of Lister, 98
Antiseptics, action of, 66
  and disinfectants, 66
  properties of charcoal, 202
    of chloral, 209
    of iodine, 309
Apiol, 467
Apollinaris water, 160
Apomorphia, 357
Aqua, 155
  acidi carbolici, 96
  acidi carbonici, 160, 329
  ammoniæ, 142
  ammoniæ fortior, 141
  amygdalæ amaræ, 147
  anisi, 149
  aurantii florum, 172
  camphoræ, 193
  chlorini, 217
  cinnamomi, 239
  creasoti, 252
  destillata, 155
  fœniculi, 278
  laurocerasi, 463
  menthæ piperitæ, 330
  menthæ viridis, 330
  rosæ, 398
Aquæ, 160
Araroba, 458
Areca nut, 449
Argenti cyanidum, 102, 160
  nitras, 160
Argenti—
  nitras fusa, 161
  oxidum, 161
Argentum, 160
Arnica, 162
Arrowroot, 328
Arsenic, 164
  constitutional effects of, 167
  in childhood, 46
  in skin disease, toleration of, 40
  white, 164
Arsenic-eating in Styria, 40, 170
Arsenici iodidum, 164
Arsenicum, 164
Arsenious acid, 96, 164
Ascaris lumbricoides, 60
Aspidospermin, 468
Assafœtida, 171
Asthma cigarettes, 183
Astringents and caustics, 68
Atropia, 175
Atropiæ sulphas, 175
Aurantii amari cortex, 172
  dulcis cortex, 172
  flores, 172
Aurantium, 172
Aurum, 449
Avenæ farina, 173
Azedarach, 450

BALSAM of Peru, 173
  of Tolu, 174
Balsamum Peruvianum, 174
  Tolutanum, 174
Barbadoes aloes, 137
Barii carbonas, 174
  chloridum, 174
Bark, cinchona, 226
Barley, 291
Bath, nitric acid, 110
Baths, therapeutic effects of, 156
Bay rum, 420
Bearberry, 434
Bebeeru bark, 334
Belæ fructus, 449
Belladonna, 175
  effects on animals, 183
  effects on rabbits, 52
  in childhood, 45
  leaves, 175
  root, 175

Belladonna—
  poisoning, 175
Belladonnæ foliæ, 175
  radix, 175
Benzoate of ammonium, 184
Benzoated lard, 184
Benzoic acid, 184
Benzoin, 184
Benzoinum, 184
Betel nut, 449
Bichromate of potassium, 383
Bismuth, 185
  subcarbonate of, 185
  subnitrate of, 185
Bismuthi subcarbonas, 185
  subnitras, 185
Bismuthum, 185
Bitter almond, 147
Bittersweet, 263
Blackberry, 399
Black draught, 413
Black drop, 347
Black hellebore, 291
Black snakeroot, 226
Black-wash, 296
Blistering collodion, 242
  papers, 197
Blisters, caution in use of, 200
  therapeutic indications for, 200
Bloodroot, 403
Bone, 358
Boneset tea, 269
Boracic acid, 441
Borax, 416
Brandy, 420
Brayera, 450
Bromide acne, 387
Bromide of ammonium, 186
Bromide of potassium, 186
Bromine, 186
Brominium, 186
Broom, 410
Brown mixture, 93, 288
Buchu, 187
Buckthorn, 470
Burgundy pitch, 369
Burnett's disinfecting fluid, 438
Butternut, 317
Butyl chloral-hydrate, 215

CACAO butter, 345
Cadmii sulphas, 188
Cadmium, 188
Caffea, 188
Caffeine, 188
Cajeput oil, 189
Calabar bean, 364
Calcii carbonas præcipitata, 189
  chloridum, 189
  hypophosphis, 189
  phosphas præcipitata, 189
Calcis hydras, 189
Calcium, 189
Calomel, 293
Calumbo, 191
Calx, 189
Calx chlorinata, 189
Camphor, 192
Camphora, 192
Canada fleabane, 269
Canada pitch, 369
Canada turpentine, 429
Canella, 195
Canna, 195
Cannabis Americana, 195
Cannabis Indica, 195
Cantharides, 197
Cantharis, 197
Cape aloes, 137
Capsicum, 201
Caraway, 204
Carbo, 201
  animalis purificatus, 201
  ligni, 201
Carbolic acid, 96
  ointment, 96
Carbon, 201
Carbonated waters, 159
Cardamom, 203
Cardamomum, 203
Carrageen, 226
Carron oil, 190
Carum, 204
Caryophyllus, 204
Casca bark, 452
Cascarilla, 205
Cassia fistula, 205
Cassia Marilandica, 205
Castillon's powders, 481
Castor, 205
Castoreum, 205

Castor oil. 343
Cataria, 206
Catechu, 206
Catnep, 206
Caution in regard to arsenic in skin disease, 169, 170
  in regard to blisters, 200
  in regard to chloral, 213
  in regard to chloroform, 224
  in regard to opium in bronchitis, 250
Cayenne pepper, 201
Cera alba, 207
  flava, 207
Cerata, 207
Cerate of cantharides, 197
  of extract of cantharides, 197
Cerates, officinal, 206
Ceratum, 123
  cantharidis, 197
  cetacei, 207
  extracti cantharidis, 197
  plumbi subacetatis, 193, 371
  resinæ, 396
  resinæ compositum, 321, 396
  sabinæ, 401
  saponis, 407
  zinci carbonatis, 438
Cerii oxalas, 207
Cerium, 206
  oxalate, 207
Cetaceum, 207
Cetraria, 208
Cevadilla, 400
Chalk, 189, 252
Chalk-lozenges, 189
Chalybeate waters, 160
Chamomile, 149
Chamomile, German, 329
Charcoal, purified animal, 201
  wood, 201
Charta cantharidis, 197
  sinapis, 415
Chartæ, 208
Chemical antidotes, 62
Chenopodium, 208
Cherry-laurel leaves, 463
Children, how to prescribe for, 45
Children's diseases, pilocarpia in, 462
Chimaphila, 208
Chinolin, 237
Chiretta, 209
Chloral, 209
  as an anæsthetic, 210
  caution in bronchitis, 212
  contra-indicated in heart disease, 211
Chloral-camphor, 215
Chloral hydrate, 209
Chloric ether, 226
Chloride of ammonium, 142
Chloride of calcium, 189
Chlorinated lime, 189
Chlorine, 217
Chlorine water, 217
Chlorinum, 217
Chloroform, 218
  how to give, 224
Chloroformum, 218
Chloroformum purificatum, 218
  venale, 218
Cholagogue purgatives, 82
Cholagogues, emetics as, 75
Cholera mixture, 194
Chondrus, 226
Chorea, toleration of sulphate of zinc in, 41
Chromic acid, 100
Chrysophanic acid, 397, 458
Cimicifuga, 226
Cinchona, 226
Cinchona flava, 226
  pallida, 227
  rubra, 227
Cinchona-red, 236
Cinchonia, 236
Cinchoniæ sulphas, 227
Cinchonidia, 237
Cinnamomum, 238
Cinnamon, 238
Citric acid, 101
Citrine ointment, 293
Classification of drugs, 91
Clover on anæsthetics, 58
  on chloroform, 222, 223, 225
Cloves, 204
Coca, 188
Cocculus indicus, 452
Coccus, 239
Cochineal, 239
Codeia, 357
Cod-liver oil, 339
  inunctions, 339

Cod liver oil—
  when to give, 35
Coffee, 188
Colchiceine, 242
Colchici radix, 239
  semen, 239
Colchicia, 240
Colchicum, 239
Cold affusions, 157
Cold baths in fever, 157
Cold pack, 157
Cold cream, 398
Collodion, 242, 289
Collodium, 242, 289
Collodium cum cantharide, 197
Collodium flexile, 289
Colocynth, 243
Colocynthis, 243
Columbo, 191
Combination of drugs, 32
Compound cathartic pills, 293
Compound spirit of ether, 135
Confectio aromatica, 239
  aurantii corticis, 172
  opii, 347
  rosæ, 398
  sennæ, 413
Confection of orange peel, 172
Confectiones, 244
Confections, officinal, 244
Congress-spring water, 159
Conii folia, 244
  fructus, 244
Conium, 244
Constitutional effects from small doses, 41
Copaiba, 248
Copper, 253
Coptis, 251
Coriander, 251
Coriandrum, 251
Cornus Florida, 252
Corrosive sublimate, 293
Cosmoline, 467
Cotton, 289
Cotton-root bark, 288
Cough-medicines, how combined, 33
Counter-irritants, 69
Counter-irritation, theory of, 69
Court-plaster, 307
Cranesbill, 286
Cream of tartar, 378
Creasote, 252
Creasotum, 252
Creta, 189, 252
Creta præparata, 189
Crocus, 252
Croton-chloral, 215
Croton oil, 345
Cryptopia, 357
Cubeb, 253
Cubeba, 253
Culver's root, 319
Cupri subacetas, 253
  sulphas, 253
Cuprum, 253
Cuprum ammoniatum, 142, 253
Curare, 453
Curcuma, 455
Cusparia, 148
Cyanide of mercury, 102
  of potassium, 102
  of silver, 102

DATURIA, 421
Deadly nightshade, 175
Decocta, 256
Decoction of aloes, 139
  of Zittmann, 303
Decoctions, officinal, 256
Decoctum cetrariæ, 208
  chimaphilæ, 208
  cinchonæ flavæ, 227
  cinchonæ rubræ, 227
  cornûs Floridæ, 252
  dulcamaræ, 263
  hæmatoxyli, 290
  hordei, 291
  quercus albæ, 395
  sarsaparillæ compositum, 407
  senegæ, 412
  uvæ ursi, 434
  Zittmanni, 303
Deodorized tincture of opium, 348
Diachylon ointment, 370
Diachylon ointment (improved), 372
Diagnosis between cholera and arsenical poisoning, 163
  of opium poisoning, 348
Dialyzed iron, 463

Diaphoretics, action of, 76
  classes of, 76
Digitalinum, 256
Digitalis, 256
  accumulation of, 41
  hints on prescribing, 41
  toleration of, 40
Dilute acetic acid, 94
  alcohol, 127
  hydrocyanic acid, 102
  nitric acid, 109
  nitro-muriatic acid, 110
  phosphoric acid, 112
  sulphuric acid, 112
Diseases from drinking water, 158
Disguising taste of drugs, 47
Disinfectant, chlorine as a, 217
Disinfectants, antiseptics and, 66
  classes of, 66
  definition of, 67
  theory of, 66
Distilled vinegar, 94
  water, 155
Diuretic, copaiba as a, 249
  effect of digitalis, 261
Diuretics, action of, 71
  classes of, 71
  how to aid, 33
Dogwood, 252
Donovan's solution, 164
Dosage, 36
Dose, action of drugs altered with, 37
  constitutional effects from small, 41
  exceptions to rule, 51
  for children, 46, 47
  general observations upon, 49
  general rule for, 50
  interval between, 38
  of medicines, 36
Dosing, principles of, 35
Dover's powder, 311
Drastic purgatives, 81
Dried alum, 139
Drugs, chemical and physiological incompatibilities of, 41
  classification of, 91
  combination of, 32
  proper time of giving, 34
Duboisia, 455
Dulcamara, 263

EARTH as a disinfectant, 67
Ecbolics, action of, 75
Effervescing draughts, 101
Egg, 358
Elaterin, 263
Elaterium, 263
Elder, 403
Elixir of cinchona flava, 237
Elixir of jaborandi, 458
Emetia, 315
Emetic action of copper, 255
  alum, 140
  antimony, 150
  apomorphia, 357
  chamomile tea, 149
  mustard, 415
Emetics, action of, 73
  as antidotes, 62
  as cholagogues, 75
  direct, 74
  effects on circulation of, 74
  effects on nervous system, 74
  effects on secretion of, 75
  free perspiration caused by, 75
  indirect, 73
Emmenagogue, aloes as an, 138
  cimicifuga, 226
  cotton-root bark, 288
Emmenagogues and Ecbolics, 75
  direct, 75
  indirect, 76
Emplastra, 264
Emplastrum aconiti, 118
  ammoniaci, 141
  ammoniaci cum hydrargyro, 141, 292
  antimonii, 150
  arnicæ, 162
  assafœtidæ, 171
  belladonnæ, 175
  ferri, 272
  galbani compositum, 279
  hydrargyri, 292
  opii, 347
  picis Burgundicæ, 369
  picis Canadensis, 369
  picis cum cantharide, 197
  plumbi, 370
  resinæ, 396
  saponis, 407
Emulsion of cod-liver oil, 341
Endermic medication, 27

Enemata, nutritive, 29
  purgative, 28
Epidermic medication, 26
Epsom salt, 326
Ergot of rye, 264
Ergot, wine of, 264
Ergota, 264
Ergotine, 264
Ergotism, 265, 267
Erigeron, 269
  Canadense, 269
Erysipelas caused by arnica, 163
Eruption of copaiba, 250
Eserine, 367
Ether, 124
Ethereal oil, 339
Ethers, officinal, 127
Ethidene dichloride, 451
Ethyl bromide, 451
Eucalyptus, 456
Eucalyptus globulus, 456
Eupatorium, 269
European worm-seed, 404
Expectorants, 76
Extracta, 270
Extracts, officinal, 270
Extractum aconiti, 118
  arnicæ, 162
  belladonnæ, 175
  belladonnæ alcoholicum, 175
  belladonnæ radicis fluidum, 175
  buchu fluidum, 187
  calumbæ fluidum, 191
  cannabis Americanæ, 195
  cannabis Indicæ, 195
  chimaphilæ fluidum, 208
  cimicifugæ fluidum, 226
  cinchonæ, 227
  cinchonæ fluidum, 227
  colchici aceticum, 240
  colchici radicis fluidum, 239
  colchici seminis fluidum, 239
  colocynthidis, 243
  colocynthidis compositum, 203, 243, 409
  conii, 244
  conii alcoholicum, 244
  conii fructus fluidum, 244
  cornûs Floridæ fluidum, 252
  cubebæ fluidum, 253
  digitalis, 256
  digitalis fluidum, 256
Extractum—
  dulcamaræ, 263
  dulcamaræ fluidum, 263
  ergotæ fluidum, 264
  erigerontis Canadensis fluidum, 269
  gelsemii fluidum, 283
  gentianæ, 285
  gentianæ fluidum, 286
  geranii fluidum, 286
  glycyrrhizæ, 288
  glycyrrhizæ fluidum, 288
  gossypii radicis fluidum, 288
  hæmatoxyli, 290
  hellebori, 291
  hydrastis fluidum, 304
  hyoscyami, 304
  hyoscyami alcoholicum, 304
  hyoscyami fluidum, 305
  ignatiæ, 307
  ipecacuanhæ fluidum, 311
  jalapæ, 316
  juglandis, 317
  krameriæ, 318
  krameriæ fluidum, 318
  lupulinæ fluidum, 292
  matico fluidum, 329
  mezerei fluidum, 331
  nucis vomicæ, 334
  opii, 347
  pareiræ fluidum, 358
  physostigmatis, 364
  pinus Canadensis fluidum, 369
  podophylli, 375
  pruni Virginianæ fluidum, 393
  quassiæ, 395
  rhei, 396
  rhei fluidum, 396
  rubi fluidum, 399
  sabinæ fluidum, 401
  sarsaparillæ compositum fluidum, 331, 408
  sarsaparillæ fluidum, 407
  scillæ fluidum, 410
  senegæ, 412
  senegæ fluidum, 412
  sennæ fluidum, 413
  serpentariæ fluidum, 414
  spigeliæ fluidum, 419
  spigeliæ et sennæ fluidum, 419
  stillingia fluidum, 421
  stramonii foliorum, 421

Extractum—
  stramonii seminis, 421
  taraxaci, 428
  taraxaci fluidum, 428
  uvæ ursi fluidum, 434
  valerianæ, 434
  valerianæ fluidum, 434
  veratri viridis fluidum, 436
  zingiberis fluidum, 440

FARINA tritici, 456
Fel bovinum purificatum, 457
Fennel, 278
Fermentum, 271
Ferri bromidum, 272
  chloridum, 271
  citras, 271
  dialysatus, liquor, 463
  et ammonii citras, 142, 271
  et ammonii sulphas, 142, 271
  et ammonii tartras, 116, 142, 271
  et potassii tartras, 271
  et quiniæ citras, 271
  et strychniæ citras, 271
  ferrocyanidum, 90, 271
  hypophosphis, 271
  lactas, 94, 271
  oxalas, 271
  oxidum hydratum, 271
  phosphas, 271
  pyrophosphas, 272
  subcarbonas, 272
  sulphas, 272
  sulphas exsiccata, 272
  sulphuretum, 271
Ferrum, 271
  redactum, 272
Ficus, 277
Fig, 277
Filix mas, 277
Flaxseed, 321
Fleabane, 269
Fleming's tincture, 118
Flour, 456
Fluid extract Canada spruce, 369
Fly-blisters, 199
Fœniculum, 278
Form of administering drugs, 34
Fowler's solution, 164
Foxglove, 256
Fuchsine, 457
Fusel oil, 136

GALBANUM, 279
Gallæ, 279
Gamboge, 281
Gambogia, 281
Garlic, 136
Gaultheria, 283
Gelsemia, 283
Gelsemium, 283
Gentian, 285
Gentiana, 285
Geranium, 286
German chamomile, 329
  tea, 93
Gin, 127
Ginger, 440
Glauber's salt, 417
Glycerina, 286
Glycerine, 286
Glycerita, 287
Glycerites, officinal, 287
Glyceritum acidi carbolici, 96
  acidi gallici, 279
  acidi tannici, 115, 279
  picis liquidæ, 369
  sodii boratis, 416
Glycyrrhiza, 288
Goa powder, 458
Gold, 449
Goldthread, 251
Gossypii radicis cortex, 288
Gossypium, 289
Goulard's cerate, 193
  extract, 371
Granati fructus cortex, 394
  radicis cortex, 394
Greenhow's formula for gouty bronchitis, 241
Green soap, 407
Gregory's powder, 397
Griffith's mixture, 276
Gross, Prof., treatment of chloroform poisoning, 219
Guaiac, 289
Guaiaci lignum, 289
  resinæ, 289
Guaiacum, 289
Guarana, 188
Gum arabic, 93

Gun cotton, 242, 289
Gutta percha, 290

HABIT, doses affected by, 38
Hæmatoxylon, 290
Halford, ammonia injection for snake-bites, 146
Hammond's pill, 363
Heart disease caused by tobacco, 426
  croton-chloral contra-indicated in, 216
Heat as a disinfectant, 67
Hedeoma, 291
Hellebore, white, 435
  American, 435
Helleborus, 291
Hemlock, 244
  spruce, 369
Hemp, American, 195
  Indian, 195
Henbane, 304
Hiera picra, 137, 195
Hirudo, 472
Hoffmann's anodyne, 135
Honey, 330
Honeys, officinal, 330
Hop-pillow, 292
Hops, 292
Hordeum, 291
Horehound, 329
Horsemint, 330
Humulus, 292
Hunyadi Janos water, 160
Huxham's tincture, 237
Hydragogue purgatives, 82
Hydrargyrum ammoniatum, 293
Hydrargyri chloridum corrosivum, 293
Hydrargyri chloridum mite, 293
  idiosyncrasy in regard to, 38
Hydrargyri cyanidum, 102, 293
Hydrargyri iodidum rubrum, 293
  iodidum viride, 293
Hydrargyri oxidum flavum, 292
  oxidum rubrum, 292
Hydrargyri sulphas flava, 293
  sulphuretum rubrum, 293
Hydrargyrum, 292
  ammoniatum, 142
Hydrargyrum cum cretâ, 190, 292
Hydrastis, 304
Hydrated lime, 189
  oxide of iron, 276
Hydriodic acid, 310
Hydrochloric acid, 107
Hydrocyanic acid, 102
Hydrocyanic acid in oil of bitter almonds, 148
Hydropathic treatment, 157
Hyoscyami folia, 304
  semen, 304
Hyoscyamia, 305
Hyoscyamus, 304
Hypodermic injection of apomorphia, 357
  of atropia and opium, 356
  of Lugol's solution, 309
  of mercury, 302
  of morphia, 357
  of quinia, 27
  of strychnia, 27, 337
Hypodermic medication, 27
Hypophosphite of lime, 191

ICE for relieving pain, 158
Iceland moss, 208
Icthyocolla, 307
Idiosyncrasy, 38
  in regard to calomel, 38, 39
  in regard to opium, 38
  in regard to quinine, 38
Ignatia, 307
Impurities of water, 155
Incompatibilities, chemical and physiological, 42, 43
Incompatibility of caustic alkalies and alkaloids, 42
  of drugs, 44
  of iodide of potassium and corrosive sublimate, 44
  of iron and cinchona, 44
  of strychnia and Calabar bean, 44
Incompatibles of iodine, 308
Incompatibles, special, 44
Indian bael, 450
Individual peculiarities, 37
Infusa, 307
Infusions, officinal, 307
Infusum anthemidis, 149
  buchu, 187

Infusum—
  calumbæ, 191
  capsici, 201
  caryophylli, 204
  cascarillæ, 205
  catechu compositum, 206
  cinchonæ flavæ, 227
  cinchonæ rubræ, 227
  digitalis, 256
  eupatorii, 269
  gentianæ compositum, 173, 286
  humuli, 292
  juniperi, 317
  krameriæ, 318
  lini compositum, 321
  pareira, 358
  picis liquidæ, 369
  pruni Virginianæ, 393
  quassiæ, 395
  rhei, 396
  rosæ compositum, 398
  salvia, 403
  sennæ, 413
  serpentariæ, 414
  spigeliæ, 419
  tabaci, 425
  taraxaci, 428
  valerianæ, 434
  zingiberis, 440
Inhalation, 28
  of ether, 126
Interval between doses, 37
Intravenous injection, 28
  of chloral, 210
Introduction, 25
Inunction of mercury in congenital syphilis, 299, 301
Iodine, 308
Iodinium, 308
Iodism, 391
  to prevent, 34
Iodoform, 310
Iodoformum, 310
Ipecacuanha, 311
  toleration of, in dysentery, 40
Irish moss, 226
Iron, 271
Isinglass, 307

JABORANDI, 458
Jalap, 316
Jalapa, 316
James's powder, 153
Jamestown weed, 421
Jervia, 437
Johnson, Dr. Geo., treatment of diarrhœa, 343
Juglans, 317
Juices, officinal, 244
Juniper, 317
Juniperus, 317

KAMALA, 470
Kermes mineral, 150
Kinic acid, 236
Kino, 318
Kinovin, 236
Kousso, 450
Krameria, 318

LABARRAQUE'S solution, 417
Lactate of iron, 107
Lactic acid, 107
Lactophosphate of lime and cod-liver oil, 342
Lactucarium, 319
Larch-bark, 463
Lard, 123
Laricis cortex, 463
Laudanum, 347
  in infancy, 46
Laughing gas, 465
Laurocerasi folia, 463
Lavandula, 319
Lavender, 319
Laxative effects of water, 158
Laxatives, 81
Lead, 370
  in drinking-water, 158
  plaster, 371
  water, 371
Ledoyen's disinfecting solution, 371
Leeches, 472
Lemon, 320
  juice, 320
Leptandra, 319
Lettuce-opium, 319
Licorice, 288
Lime, 189
  water, 189

Limones, 320
Limonis cortex, 320
  succus, 320
Lini farina, 321
Linimenta, 321
Liniments, officinal, 321
Linimentum aconiti, 118
  ammoniæ, 142
  calcis, 190, 321
  camphoræ, 193
  cantharidis, 197
  chloroformi, 218
  plumbi subacetatis, 371
  saponis, 193, 407
  terebinthinæ, 429
Linseed meal, 321
  oil, 321
Linum, 321
Liquor ammonii acetatis, 142
  arsenici chloridi, 164
  arsenici et hydrargyri iodidi, 164, 293, 308
  barii chloridum, 174
  calcii chloridi, 190
  calcis, 190
  ferri chloridi, 271
  ferri citratis, 271
  ferri dialysatus, 463
  ferri nitratis, 272
  ferri subsulphatis, 272
  ferri tersulphatis, 272
  gutta-perchæ, 290
  hydrargyri nitratis, 293
  iodinii compositus, 308
  magnesii citratis, 326
  morphiæ sulphatis, 348
  plumbi subacetatis, 371
  plumbi subacetatis dilutus, 371
  potassæ, 377
  potassi citratis, 377
  potassii arsenitis, 164, 377
  potassii permanganatis, 377
  sodæ, 416
  sodæ chlorinatæ, 417
  sodii arseniatis, 164, 417
  zinci chloridi, 438
Liquores, 325
Liquors, officinal, 325
Lister's antiseptic system, 98
Lithii carbonas, 323
  citras, 323
Lithium, 323
Lobelia, 325
Logwood, 290
Lugol's solution, 308
Lupulina, 292
Lycopodium, 326

MACE, 332
  Macis, 332
Magnesia, 326
Magnesii carbonas, 326
  sulphas, 326
Magnesium, 326
Male fern, 277
Malt extract, 292
Manganese, 328
Manganesii oxidum nigrum, 328
  sulphas, 328
Manganesium, 328
Manna, 328
Maranta, 328
Marble, 329
Marjoram, 358
Marmor, 329
Marrubium, 329
Marshmallow, 139
Marsh-rosemary, 420
Marsh's test for arsenic, 165
Mastic, 329
Mastiche, 329
Materia medica, primary list of, 93
Matico, 329
Matricaria, 329
May apple, 375
Meconine, 357
Mel, 330
  despumatum, 330
  rosæ, 398
  sodii boratis, 416
Mellita, 330
Mentha piperitæ, 330
  viridis, 330
Mercurial baths in syphilis, 299, 300
  fumigation, 300
Mercurialization, 300
Mercury, 292
Methyl conia, 245
Metric system, 482
  in medicine, 54, 485
Mezereon, 331

Mezereum, 331
Milk of almonds, 147
  of ammoniac, 141
  of assafœtida, 171
Mineral waters, 159
Mistura ammoniaci, 141
  amygdalæ, 147
  assafœtidæ, 171
  chloroformi, 193, 218
  cretæ, 190
  ferri composita, 272
  glycyrrhizæ composita, 289
  potassii citratis, 320
Misturæ, 331
Mixtures, officinal, 331
Molasses, 402
Monarda, 331
Mori succus, 464
Morphia, 348
Morphia valerianas, 117
Morphiæ acetas, 348
  murias, 348
  sulphas, 348
Moschus, 332
Mouth-wash, thymol, 471
Mucilages, officinal, 332
Mucilagines, 332
Mucilago acaciæ, 93
  sassafras medullæ, 408
  tragacanthæ, 432
  ulmi, 433
Mulberry juice, 464
Muriatic acid, 107
Muscarin, 464
Musk, 332
Mustard, 414
  poultice, how to make, 416
Mydriasis by belladonna, 177
  by hyoscyamus, 306
Myristica, 332
Myrrh, 333
Myrrha, 333

NARCEIA, 357
Narcotics, 78
Narcotics and Anodynes, 78
Narcotina, 357
Nectandra, 334
Neroli water, 173
Nicotia, 426
Nitric acid, 109
Nitrite of amyl, 445
Nitroglycerin, 464
Nitroglycerinum, 464
Nitro-muriatic acid, 110
Nitrous oxide gas, 465
Norwood's, Dr., tincture of veratrum viride, 436
Nutgall, 279
Nutmeg, 332
Nux vomica, 334

OAK, 395
Oat-meal, 173
Oil of almonds, expressed, 147
  of amber, 344
  of American pennyroyal, 291
  of anise, 149
  of bergamot, 185
  of bitter almonds, 147
  of cajuput, 189
  of camphor, 192
  of Canada fleabane, 269
  of caraway, 204
  of castor, 343
  of chamomile, 149
  of cinnamon, 238
  of cloves, 204
  of cod-liver, 339
  of copaiva, 248
  of croton, 345
  of cubebs, 253
  of fennel, 278
  of gaultheria, 283
  of horse-mint, 331
  of juniper, 317
  of lavender, 319
  of lemon, 320
  of linseed, 321
  of neroli, 173
  of nutmeg, 332
  of olive, 342
  of orange, 172
  of origanum, 358
  of peppermint, 331
  of pimento, 368
  of rose, 398
  of rosemary, 399
  of rue, 399
  of savin, 401
  of sassafras, 408
  of spearmint, 331

Oil—
  of spruce, 369
  of sweet almonds, 147
  of tobacco, 425
  of turpentine, 429
  of theobroma, 345
  of thyme, 345
  of valerian, 435
  of wormseed, 208
Oils, officinal, 338
Ointments, 433
Olea, 338
Oleo-resinæ, 339
Oleo resinæ capsici, 201
  cubebæ, 253
  filicis, 277
  lupulinæ, 292
  piperis, 368
  zingiberis, 440
Oleo-resins, officinal, 396
Oleum æthereum, 339
  amygdalæ amaræ, 147
  amygdalæ expressum, 147
  anisi, 149
  anthemidis, 149
  bergamii, 185
  cajuputi, 189
  camphoræ, 192
  cari, 204
  caryophilli, 204
  chenopodii, 208
  cinnamomi, 238
  copaibæ, 248
  cubebæ, 253
  erigerontis Canadensis, 269
  fœniculi, 278
  gaultheriæ, 283
  hedeomæ, 291
  juniperi, 317
  lavandulæ, 319
  limonis, 319
  lini, 321
  menthæ piperitæ, 330
  menthæ viridis, 330
  monardæ, 331
  morrhuæ, 339
  myristicæ, 332
  olivæ, 342
  origani, 358
  pimentæ, 368
  ricini, 343
  rosæ, 398
Oleum—
  rosmarini, 399
  rutæ, 399
  sabinæ, 401
  sassafras, 408
  succini, 344
  succini rectificatum, 344
  tabaci, 425
  terebinthinæ, 429
  theobromæ, 345
  thymi, 345
  tiglii, 345
  valerianæ, 435
Olive oil, 342
Opium, 347
  effect on rabbits of, 52
  idiosyncrasy in regard to, 41
  in childhood, 46
Opodeldoc, 345
Orange, 172
  flowers, 172
Orange-peel, bitter, 172
  sweet, 172
Orgeat syrup, 172
Origanum, 358
Os, 358
Ovum, 358
Oxalate of cerium, 207
Oxalic acid, 111
Ox-bile, 457
Oyster-shell, 431
  prepared, 431

PAIN relieved by counter-irritants, 69
Painters' colic, 373
Papaver, 358
Papaverina, 358
Paramorphia, 358
Parasiticides, 61
Paregoric, 347
Pareira, 358
  brava, 358
Parsley, 467
Partridge-berry, 283
Pearl-ash, 377
Peculiarities, individual, 38
Pelletiérine, 394
Pennyroyal, American, 291
Pepo, 359
Pepper, 368

Peppermint, 330
Pepsin, 465
Pepsini porci, 465
Peruvian bark, 226
Petroleum, 466
Petroselinum, 467
Phosphoric acid, 112
Phosphorus, 359
Physiological antidotes, 63
Physiology of vomiting, 74
Physostigma, 364
Picrotoxin, 452
Pill, Guy's, 303
Pills, officinal, 368
Pilocarpia, 458
Pilula ferri carbonatis, 272
  saponis composita, 407
Pilulæ, 368
  aloes, 137
  aloes et assafœtidæ, 137, 171
  aloes et mastiches, 137
  aloes et myrrhæ, 137, 333
  antimonii compositæ, 150, 293
  assafœtidæ, 171
  catharticæ compositæ, 241, 293
  copaibæ, 248
  ferri compositæ, 272
  ferri iodidi, 272, 308
  galbani compositæ, 171, 279
  hydrargyri, 292
  opii, 347
  quiniæ sulphatis, 227
  rhei, 396
  rhei compositæ, 137, 396
  scillæ compositæ, 141, 409
Pimenta, 368
Pimento, 368
Pinkroot, 419
Pinus Canadensis, 369
Pinus palustris, 369
Piper, 368
Piperin, 368
Pipsissewa, 208
Pix Burgundica, 369
  Canadensis, 369
  liquida, 369
Plaster, warming, 197
Plasters, officinal, 264
Plumbi acetas, 371
  carbonas, 371
  iodidum, 371
  nitras, 371
Plumbi—
  oxidum, 370
Plumbum, 370
Podophyllin, 375
Podophyllum, 375
Poisoning, 61, 474 (see Index of Diseases and Table of Poisons)
  by acids, 58
  by aconite, 118
  by alcohol, 128
  by ammonia, 142
  by amylic alcohol, 136
  by antimony, 150
  by arsenic, 164, 165
  by barium, 174
  by belladonna, 182
  by bichromate of potassium, 384
  by bitter almonds, 148
  by cantharides, 197
  by carbolic acid, 97
  by chloral, 209, 212
  by chloroform, 219, 222
  by copper, 254
  by corrosive sublimate, 293
  by digitalis, 267
  by hemlock, 247
  by hydrocyanic acid, 102, 103
  by lead, 371
  by muriatic acid, 107
  by opium, 348
  by oxalic acid, 111
  by phosphorus, 362
  by physostigma, 367
  by potassa, 378
  by santonin, 406
  by soda, 417
  by strychnia, 335
  by sulphuric acid, 113
  by tartar emetic, 150
  by tartaric acid, 116
  by tobacco, 425
  by veratria, 400
  vegetable, 477
Poisons, 474
  table of, 474
  tests for, 480
Pomegranate, 394
Poppy capsules, 358
Port wine, 127
Potassa, 376

Potassa-alum, 376
Potassa cum calce, 190, 376
  with lime, 376
Potassii acetas, 376
  bicarbonas, 377
  bichromas, 377, 383
  bitartras, 377
  bromidum, 186, 377, 384
  carbonas, 377
  carbonas impura, 377
    pura, 377
  chloras, 377
  citras, 377
  cyanidum, 377
  et sodii tartras, 378
  ferrocyanidum, 102, 272, 377
  hypophosphis, 378
  iodidum, 377, 388
  nitras, 378
  permanganas, 378
  sulphas, 378
  sulphis, 378, 422
  sulphuretum, 378
  tartras, 378
Potassium, 376
Potassium bromide, 284
Potassium iodide eruptions, 391
Powders, officinal, 394
Precipitated carbonate of lime, 189
  phosphate of lime, 189
Prepared chalk, 189
Prescribing, rules for, 30
  for children, 45
Prescription writing, 48
Prescriptions, for combining:
  alum, 140
  arsenic, 171
  ammonium, acetate of, 147
    carbonate of, 146
    chloride of, 147
  benzoin, 184
  bismuth, 186
  capsicum, 201
  carbolic acid, 98
  castor oil, 344
  catechu, 206
  cerium, oxalate of, 207
  chloral, 215
  cod liver oil, 342
  colchicum, 241
  columbo, 192
Prescriptions—
  conia (hypodermic), 248
  copaiva, 251
  croton oil, 347
  digitalis, 262
  ergot, 268
  fern-oil, 278
  gallic acid, 280
  garlic, syrup of, 137
  hæmatoxylon, 291
  hydrocyanic acid, 106
  hyoscyamia, 305
  hyoscyamus, 305
  Indian hemp, 197
  iron, 277
  juniper, 318
  liquor ammonii acetatis, 147
  magnesia, 327
  male fern, 278
  mercury, 302
  myrrh, 334
  nitric acid, 110
  nitro-muriatic acid, 111
  oil of amber, 344
  opium, 355
  podophyllin, 376
  potash salts, 383
  potassium, bromide of, 387
    iodide of, 393
  quinia, 235
  rhubarb, 398
  salicylic acid, 445
  scoparius, 411
  senega, 413
  soda, 418
  sodium, salicylate of, 438
  strychnia, 338
  sulphuric acid, 114
  taraxacum, 428
  tartar emetic, 154
  thymol, 471
  turpentine, 431
  zinc salts, 439
Prescriptions, how to write, 30, 48
Proper time for exhibiting drugs, 34
Prunes, 393
Prunum, 393
Prunus Virginianæ, 393
Prussian blue, 271
Ptomaïnes, 480

Pulveres, 394
  effervescentes, 116
  effervescentes aperientes, 116
Pulvis aloes et canellæ, 35, 195
  aromaticus, 203, 238
  ipecacuanhæ comp., 311
  jalapæ compositus, 316
  rhei compositus, 396
Pumpkin-seeds, 359
Punica granatum, 394
Purgatives, action of, 81
  classes of, 81
  combination of, 35
  for children, 46
  when to be given, 35
Purging cassia, 205
Purified aloes, 137
  ox-bile, 457
Pyroxylon, 242, 289

QUASSIA, 390
Quebracho, 468
Queen's root, 421
Quercus alba, 395
  tinctoria, 395
Quicklime, 189
Quinia, administration of, 234
  idiosyncrasy in regard to, 39
  sulphas, 234
  valerianas, 117, 136
Quinic acid, 236
Quinidia, 236
Quino-tannic acid, 236

RAISINS, 434
Red saunders, 404
Refrigerants, antipyretics and, 68
Reinsch's test for arsenic, 154
Remedies, certain classes of, 55
  officinal, x
Resin, 396
Resina, 396
  jalapæ, 316
  podophylli, 375
  scammonii, 409
Resinæ, 396
Resins, officinal, 396
Resorcin, 470
Rhamni succus, 470
Rhatany, 318
Rheum, 396
Rhigolene, 467
Rhubarb, 396
Rochelle salt, 377
Rosa centifolia, 398
  gallica, 398
Rose, 398
Rosemary, 399
Rosmarinus, 399
Rottlera, 470
Routes by which medicines enter
  the circulation, 24
Rubus, 394
Rue, 399
Rules for prescribing, 29
Ruta, 399

SABADILLA, 400
Sabina, 401
Saccharum, 402
  lactis, 402
Saffron, 252
Sage, 403
Sago, 402
Salicin, 470
Salicylic acid, 443
Saline purgatives, 82
  waters, 159
Salivation, mercurial, 300
Salvia, 403
Sambucus, 403
Sanguinaria, 403
Sanguisuga officinalis, 472
Santalum, 404
Santonica, 404
Santoninum, 404
Sapo, 407
  viridis, 407
Saratoga water, 159
Sarsaparilla, 407
Sassafras, 408
  medulla, 408
Savine, 401
Scammonium, 409
Scammony, 409
Scheele's solution, 101
Scilla, 409
Scoparius, 410
Scudamore's mixture, 241
Seidlitz powders, 417
Seltzer water, 159

Senega, 412
Seneka, 412
Senna, 413
  American, 205
Serpentaria, 414
Sevum, 414
Sherry wine, 127
Silver, 160
  cyanide of, 160
  fused nitrate of, 161
  in surgery, 161
  nitrate of, 161
  oxide of, 161
  pills of nitrate of, liable to explode, 165
  toleration of, 162
Sinapis alba, 414
  nigra, 414
Skin-discoloration from silver salts, 162
Slippery elm, 433
Snakeroot, 414
Soap, 407
Socotrine aloes, 137
Soda, 417
  mint, 419
  powders, 116
Sodii acetas, 416
  arsenias, 164, 416
  bicarbonas, 416
  bicarbonas venalis, 416
  boras, 416
  carbonas, 416
  carbonas exsiccata, 416
  chloridum, 416
  hypophosphis, 417
  hyposulphis, 417, 422
  nitras, 417
  phosphas, 417
  salicylas, 443
  sulphas, 417
  sulphis, 417, 422
Sodium, 417
Solution of acetate of ammonium, 142
  dialyzed iron, 463
  of arseniate of sodium, 164
  of arsenite of potassium, 377
  of chloride of arsenic, 164
  of chloride of barium, 174
  of chloride of lime, 196
Solution—
  of iodide of arsenic and mercury, 164, 293, 308
  of lime, 196
  of nitrate of iron, 272
  of nitrate of mercury, 293
  of permanganate of potassium, 378
  of persulphate of iron, 372
  of potassa, 272
  of soda, 417
  of subacetate of lead, 371
  of subsulphate of iron, 272
  of sulphate of morphia, 345
  of tersulphate of iron, 272
Solution, Monsel's, 272
Spanish-fly, 197
Spearmint, 331
Specific action of quinia, 232
Spermaceti, 207
  cerate, 207
Spice plaster, 204
Spigelia, 419
Spirit of ammonia, 142
  of ammonia, aromatic, 142
  of camphor, 193
Spirits, officinal, 420
Spiritus ætheris compositus, 124, 135
  ætheris nitrosi, 135
  ammoniæ, 142
  ammoniæ aromaticus, 142, 146, 320
  anisi, 149
  camphoræ, 193
  chloroformi, 218
  cinnamomi, 239
  frumenti, 127, 420
  Genevæ, 127
  juniperi, 317
  juniperi compositus, 127, 317
  lavandulæ, 319
  lavandulæ compositus, 319
  limonis, 320
  menthæ piperitæ, 330
  menthæ viridis, 330
  myrciæ, 127, 420
  myristicæ, 332
  saponis kalinis, 407
  vini Gallici, 127, 420
Spurred rye, 264

Squill, 409
Starch, 148
  of canna, 195
Statice, 420
Stillingia, 421
Stimulants, alcoholic, 127
Stimulants and sedatives, 84
Stomach-pump, caution in regard to, 62
Storax, 422
Stramonii folia, 421
Stramonii semen, 421
Stramonium, 421
Strong alcohol, 127
Stronger æther, 124
Strychnia, 334
  eaten by pigeons, 52
  hints on prescribing, 42
  injections, 336
Strychniæ sulphas, 334
Strychnos ignatia, 334
  nux vomica, 334
Styptic colloid, 242
Styrax, 422
Styria, arsenic eating in, 40, 168
Succi, 422
Succus conii, 244
  taraxaci, 428
Suet, 414
Sugar, 402
  of lead, 371
  of milk, 402
Sulphate of atropia, 175
  of morphia, 348
Sulphur, 422
  lotum, 422
  præcipitatum, 422
  sublimatum, 422
Sulphurated antimony, 150
Sulphuret of antimony, 150
Sulphuretted waters, 159
Sulphuric acid, 112
Sulphuris iodidum, 422
Sulphurous acid, 112
Sumbul, 470
Summary of Action of Drugs, 90
Suppositoria, 345, 424
  acidi carbolici, 96
  acidi tannici, 116, 279
  aloes, 138
  assafœtidæ, 171
  belladonnæ, 175
Suppositoria—
  morphiæ, 348
  opii, 348
  plumbi, 371
  plumbi et opii, 348, 371
Suppositories, 29, 345
  aloes, 138
  assafœtida, 171
  belladonna, 175
  carbolic acid, 96
  officinal, 424
Sweet almond, 147
Sweet spirit of nitre, 135
Syrup, orgeat, 172
Syrupi, 425
Syrups, officinal, 425
Syrupus, 412
  acaciæ, 93
  acidi citrici, 101, 320
  allii, 136
  amygdalæ, 147
  aurantii corticis, 172
    florum, 172
  ferri iodidi, 272, 308
  fuscus, 402
  ipecacuanhæ, 311
  krameriæ, 318
  lactucarii, 319
  limonis, 320
  papaveris, 358
  pruni Virginianæ, 393
  rhei, 396
    aromaticus, 396
  rosæ Gallicæ, 398
  rubi, 399
  sarsaparillæ compositum, 408
  scillæ, 409
    compositus, 150, 409
  senegæ, 412
  tolutanus, 174
  zingiberis, 440

TABACUM, 425
  Table-salt, 416
Tæniæ, varieties of, 59
Tamarind, 427
Tamarindus, 427
Tannic acid, 115
Tapioca, 428
Tar, 369
Taraxacum, 428

- Tartar emetic, 149
- Tartaric acid, 116
- Tartrate of antimony and potassium, 149
  - of iron and ammonium, 150
- Tea, 188
- Tea-berry, 283
- Temperature reduced by baths, 156
- Terebinthina, 429
  - Canadensis, 429
- Testa, 431
  - præparata, 189, 431
- Tests for alcohol, 128
  - antimony, 150
  - arsenic, 166
  - atropia, 479
  - barium, 174
  - brucia, 335, 479
  - conia, 244
  - copper, 254
    - sulphate of, 255
  - delphinia, 479
  - emetia, 479
  - hydrocyanic acid, 102
  - mercury, 294
  - morphia, 479
  - muriatic acid, 109
  - oxalic acid, 112
  - potassii bichromas, 384
  - potassium, 356
  - sodium, 417
  - solanium, 479
  - strychnia, 335, 479
  - sulphuric acid, 113
  - tannic acid, 116
  - tartaric acid, 116
  - veratria, 479
- Tetanus from hypodermic injection, 27
- Thebaia, 357
- Theobroma, 345
- Therapeutic deductions from physiological experiments, 50
- Thieves' vinegar, 93
- Thoroughwort, 269
- Thymol, 471
- Time for exhibiting medicines, 34
- Tinctura aconiti radicis, 118
  - aloes, 137
  - aloes et myrrhæ, 137, 333
  - arnicæ, 162
- Tinctura—
  - assafœtidæ, 171
  - aurantii, 172
  - belladonnæ, 175
  - benzoini, 184
  - benzoini composita, 137, 174, 184
  - calumbæ, 191
  - cannabis, 196
  - cantharidis, 197
  - capsici, 201
  - cardamomi, 204
    - composita, 204
  - castorei, 205
  - catechu, 206
  - cinchonæ, 227
  - colchici, 240
  - composita, 172, 227
  - cinnamomi, 238
  - conii, 244
  - cubebæ, 253
  - digitalis, 256
  - ferri chloridi, 271
  - gallæ, 279
  - gentianæ composita, 172, 204, 286
  - guaiaci, 289
  - guaiaci ammoniata, 142, 289
  - hellebori, 291
  - humuli, 292
  - hyoscyami, 305
  - iodinii, 308
  - iodinii composita, 308
  - jalapæ, 316
  - kino, 318
  - krameriæ, 318
  - lobeliæ, 324
  - lupulinæ, 291
  - myrrhæ, 333
  - nucis vomicæ, 334
  - opii, 347
  - opii acetata, 347
  - opii camphorata, 193, 347
  - opii deodorata, 348
  - quassiæ, 395
  - rhei, 214, 396
  - rhei et sennæ, 396, 413
  - sanguinariæ, 403
  - scillæ, 410
  - serpentariæ, 414
  - stramonii, 421
  - tolutana, 174

Tinctura—
  valerianæ, 434
  valerianæ ammoniata, 142, 434
  veratri viridis, 436
  zingiberis, 440
Tincturæ, 432
Tincture of gelsemium, 283
Tinctures, officinal, 432
Tobacco, 425
Tolerance of antimony, 41, 152
  of opium, 354
  of quinia, 232
  of zinc sulphate, 440
Toleration of drugs, 41
Tonics, 86
Tragacanth, 432
Tragacantha, 432
Treatment of poisoning (see Antidote, and Index of Diseases)
Trimethylamine, 471
  hydrochlorate of, 471
Troches, officinal, 434
Trochisci, 434
  acidi tannici, 116, 279
  cretæ, 190
  cubebæ, 253
  ferri subcarbonatis, 272
  glycyrrhizæ et opii, 288, 348
  ipecacuanhæ, 311
  magnesiæ, 326
  menthæ piperitæ, 336
  morphæ et ipecacuanhæ, 315, 348
  potassii chloratis, 377
  santonini, 404
  sodii bicarbonatis, 417
  zingiberis, 440
Turmeric, 455
Turpentine, 429
Turpeth mineral, 293
Typhoid fever propagated by water, 159

ULMUS, 433
  Unguenta, 433
Unguentum, 123
  acidi carbolici, 96
  acidi tannici, 115, 279
  antimonii, 150
  aquæ rosæ, 148, 398
  belladonnæ, 175

Unguentum—
  benzoini, 184
  cantharidis, 197
  creasoti, 252
  gallæ, 279
  hydrargyri, 292
  hydrargyri ammoniati, 293
  hydrargyri iodidi rubri, 293
  hydrargyri nitratis, 293
  hydrargyri oxidi flavæ, 292
  hydrargyri oxidi rubri, 292
  iodinii, 308
  iodinii compositum, 308
  mezerei, 331
  picis liquidæ, 369
  plumbi carbonatis, 371
  plumbi iodidi, 371
  potassii iodidi, 377
  stramonii, 421
  sulphuris, 422
  sulphuris iodidi, 422
  tabaci, 425
  veratriæ, 400
  zinci oxidi, 438
Uva passa, 434
Uva ursi, 434

VALERIAN, 434
  Valerianate of ammonia, 435
Valerianic acid, 117, 434
Vallet's mass, 272
Vanilla, 435
Vaseline, 467
Veratralbia, 435
Veratria, 400
Veratroidia, 437
Veratrum album, 435
  viride, 436
Verdigris, 253
Vienna paste, 376
Vina, 437
Vinegar, 94
Vinum aloes, 138, 204
  antimonii, 150
  colchici radicis, 240
  colchici seminis, 240
  ergotæ, 265
  ipecacuanhæ, 311
  opii, 347
  Portense, 121
  rhei, 195, 397

Vinum—
  album, 425
  xericum, 425
Virginia snakeroot, 416
Virginia Sulphur Springs, 150
Vomiting, physiology of, 78
  therapeutics of, 78

WARBURG'S tincture, 238
  Warm bath in children's complaints, 151
Warner's gout cordial, 835
Water, 55
  ammonia, 312
  ammonia stronger, 312
  anise, 31
  bitter almond, 367
  camphor, 32
  distillation of natural, 35, 58
  hot and cold, 55
  orange-flower, 372
Wax, 285
Weights and measures, 9, 840
[illegible] lotion, 658
[illegible], 13

Wild cherry, 323
Wine of tar, 86
Wines, officinal, 457
Wintergreen, 285
Wistar's cough lozenges, 348
Woorara, 45
Wormseed, 204
Wormwood, 9
Wrist-drop, 578

YEAST, 27
  Yellow jasmine, 283

ZINC, 417
  Zinci acetas, 818
  carbonas præcipitata, 818
  chloridum, 818
  oxidum, 817
  oxidum venale, 817
  sulphas, 818
  sulphas, inunction of, 840
  valerianas, 317, 818
Zincum, 817
Zingiber, 641
[illegible] ammonium, 814

THE NATIONAL DISPENSATORY,

CONTAINING THE NATURAL HISTORY, CHEMISTRY, PHARMACY, ACTIONS AND USES OF MEDICINES,

INCLUDING THOSE RECOGNIZED IN THE PHARMACOPŒIAS OF THE UNITED STATES, GREAT BRITAIN AND GERMANY, WITH NUMEROUS REFERENCES TO THE FRENCH CODEX.

BY ALFRED STILLÉ, M.D., LL.D.,
PROFESSOR OF THE THEORY AND PRACTICE OF MEDICINE AND OF CLINICAL MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA.

AND

JOHN M. MAISCH, PHAR.D.
PROFESSOR OF MATERIA MEDICA AND BOTANY IN THE PHILADELPHIA COLLEGE OF PHARMACY.

Second edition, thoroughly revised, with numerous additions. In one very large and handsome octavo volume of 1692 pages, with 239 illustrations. Cloth, $6.75; leather, raised bands, $7.50; very handsome half Russia, raised bands, $8.25.

In the recent announcement of the UNITED STATES PHARMACOPŒIA of 1880, a list is given of new material inserted, and of the 102 items under the head of NEW DRUGS, OILS AND EXTRACTS, all are in the NATIONAL DISPENSATORY excepting 6, while of the FLUID EXTRACTS quite a large proportion is included. Besides embracing practically the whole UNITED STATES PHARMACOPŒIA the NATIONAL DISPENSATORY contains a long list of unofficinal drugs and preparations, and also selections from the recent German and French Pharmacopœias. Purchasers will therefore find that the NATIONAL DISPENSATORY, second edition, is for all practical purposes a commentary on the UNITED STATES PHARMACOPŒIA of 1880.

This is a great work by two of the ablest writers on materia medica in America. The authors have produced a work which. for accuracy and comprehensiveness, is unsurpassed by any work on the subject. There is no book in the English language which contains so much valuable information on the various articles of the materia medica. The work has cost the authors years of laborious study, but they have succeeded in producing a dispensatory which is not only *national*, but will be a lasting memorial of their learning and ability.—*Edinburgh Medical Journal*, Nov. 1879.

The general arrangements, the excellent manner in which the individual articles are presented, the eminently practical character, together with the positiveness of expression in the therapeutical indications of special remedies, the adoption of the metric system of doses, and the fact that it is for the most part abreast with the most recent developments of scientific investigation, all tend to make it the best dispensatory extant.—*New York Med. Journ.*, Dec 1879.

We can unhesitatingly assert that the *National Dispensatory* is the most complete and perfect work of the kind ever published, and should be found not only on the shelves of the physician's library, but also on his table for ready and constant reference. The profession of America owe a debt of gratitude to the editors and publisher for this happy result of their conjoint labors.—*St. Louis Courier of Medicine*, Dec. 1879.

The *National Dispensatory* is beyond dispute the very best authority. It is throughout complete in all the necessary details, clear and lucid in its explanations, and replete with references to the most recent writings, where further particulars can be obtained, if desired. Its value is greatly enhanced by the extensive indexes—a general index of materia medica, etc., and also an index of therapeutics. It would be a work of supererogation to say more about this well-known work. No practising physician can afford to be without the *National Dispensatory*.—*Canada Medical and Surgical Journal*, Feb. 1880.

HENRY C. LEA'S SON & CO., PHILADELPHIA.

WORKS ON MATERIA MEDICA, CHEMISTRY, PHARMACY, ETC.

MAISCH'S MATERIA MEDICA—Just Ready.

A MANUAL OF MATERIA MEDICA. Being a Guide to Materia Medica of the Vegetable and Animal Kingdoms. For the use of Students, Druggists, Pharmacists, and Physicians. By JOHN M. MAISCH, Phar. D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. In one handsome 12mo. volume of 451 pp., with 194 beautiful illustrations on wood. Cloth, $2.75.

A book evidently written for a purpose, and not simply for the purpose of writing a book. It is comprehensive, inasmuch as it refers to all, or nearly all that is of essential value in organic materia medica, clear and simple in its style, concise, since it would be difficult to find in it a superfluous word, and yet sufficiently explicit to satisfy the most critical. The text is freely illustrated with woodcuts, which cannot fail to be valuable in familiarizing students with the physical, microscopic and macroscopic appearance of drugs. The work is preceded by a table of contents, and completed with that, without which no book should be considered complete, *i. e.*, an index. In fact, the little book is just what it pretends to be, and is worthy of unqualified commendation.—*Chicago Medical Journal and Examiner*, August, 1882.

FOWNES' CHEMISTRY.

A MANUAL OF CHEMISTRY, THEORETICAL AND PRACTICAL. By GEORGE FOWNES, Ph. D. Revised and corrected by HENRY WATTS, B.A., F.R.S., author of "A Dictionary of Chemistry, etc." A new American, from the twelfth and enlarged London edition. Edited by ROBERT BRIDGES, M. D. In one large royal 12mo. volume of 1031 pp., with a colored plate and 177 illustrations on wood. Cloth, $2.75; leather, $3.25.

The conscientious care which has been bestowed upon it by the American and English editors, renders it still, perhaps, the best book for the student and the practitioner who would keep alive the acquisitions of his student days. This work, inorganic and organic, is complete in one convenient volume. In its earliest editions it was fully up to the latest advancements and theories of that time. In its present form it presents, in a remarkably convenient and satisfactory manner, the principles and leading facts of the chemistry of to-day.—*Cincinnati Lancet and Clinic*, Dec. 14, 1878.

ATTFIELD'S CHEMISTRY—Now Ready.

CHEMISTRY: GENERAL, MEDICAL AND PHARMACEUTICAL; INCLUDING THE CHEMISTRY OF THE U. S. PHARMACOPŒIA. A Manual of the General Principles of the Science and their Application to Medicine and Pharmacy. By JOHN ATTFIELD, Ph.D., Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain, etc. Eighth edition, specially revised by the Author. In one handsome royal 12mo. volume of 701 pages, with 87 illustrations. Cloth, $2.50; leather, $3.

PARRISH'S PHARMACY.

A TREATISE ON PHARMACY. Designed as a text-book for the Student, and as a guide for the Physician and Pharmaceutist; with many formulæ and prescriptions. By EDWARD PARRISH, late Professor of Materia Medica in the Philadelphia College of Pharmacy. Fourth edition, thoroughly revised, by THOMAS S. WIEGAND. In one handsome octavo volume of 985 pp., with 280 illustrations. Cloth, $5.50; leather, $6.50; half Russia, $7.

HENRY C. LEA'S SON & CO., PHILADELPHIA.

CATALOGUE OF BOOKS

PUBLISHED BY

HENRY C. LEA'S SON & CO.

(LATE HENRY C. LEA.)

The books in the annexed list will be sent by mail, post-paid, to any Post Office in the United States, on receipt of the printed prices. No risks of the mail, however, are assumed, either on money or books. Gentlemen will, therefore, in most cases, find it more convenient to deal with the nearest bookseller.

In response to a large number of inquiries for a finer binding than is usually placed on medical books, we now finish many of our standard publications in half Russia, using in the manufacture none but the best materials. To foster the growing taste, the prices have been fixed at so small an advance over the cost of leather binding as to bring it within the reach of all to possess a library attractive to the eye as well as to the mind.

Detailed catalogues furnished or sent free by mail on application.

HENRY C. LEA'S SON & CO.,
Nos. 706 and 708 Sansom Street, Philadelphia.

PERIODICALS.

THE MEDICAL NEWS,

A WEEKLY JOURNAL OF MEDICAL SCIENCE,

Published every Saturday, containing in the 28-32 large double-columned quarto pages of each number more reading matter than any other medical weekly in America.

FIVE DOLLARS ($5) per annum, in advance.

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES,

EDITED BY I. MINIS HAYS, A.M., M.D.,

Is published quarterly, on the 1st of January, April, July and October. Each number contains over 300 octavo pages, fully illustrated.

FIVE DOLLARS ($5) per annum, in advance.

COMMUTATION RATES.

THE MEDICAL NEWS THE AMERICAN JOURNAL OF MEDICAL SCIENCES	Nine dollars per annum, in advance.

ALLEN (HARRISON). A SYSTEM OF HUMAN ANATOMY. WITH AN INTRODUCTORY CHAPTER ON HISTOLOGY, by E. O. Shakespeare, M.D. To be completed in one large and handsome quarto volume of about 600 double-columned pages, with 3 engravings on stone on 109 plates, and about 100 woodcuts in the text. In six sections, each in a portfolio. Section I. (Histology), Section II. (Bones and Joints), Section III. (Muscles and Fasciæ), and Section IV. (Arteries, Veins and Lymphatics), *just ready*. Section V. (Nervous System) *shortly*. Section VI. (Organs of Sense, of Digestion and Genito-Urinary Organs) in press. Price per section, $3 50. *Sold by subscription only*.

AMERICAN SYSTEM OF GYNÆCOLOGY. In treatises by various authors. In two large octavo volumes. *In active preparation.*

ASHHURST (JOHN, Jr.) THE PRINCIPLES AND PRACTICE OF SURGERY. FOR THE USE OF STUDENTS AND PRACTITIONERS. Third and revised edition. In one large and handsome octavo volume of 1060 pages, with 555 woodcuts. Cloth, $6; leather, $7; very handsome half Russia, raised bands, $7 50.

ASHWELL (SAMUEL). A PRACTICAL TREATISE ON THE DISEASES OF WOMEN. Third American from the third London edition. In one octavo volume of 520 pages. Cloth, $3 50.

ATTFIELD (JOHN). CHEMISTRY; GENERAL, MEDICAL AND PHARMACEUTICAL. Tenth edition, specially revised by the Author for America. In one handsome 12mo. volume of 730 pages, with 87 illustrations. Cloth, $2 50; leather, $3 00. *Just ready.*

BARLOW (GEORGE H.) A MANUAL OF THE PRACTICE OF MEDICINE. In one 8vo. volume of 603 pages. Cloth, $2 50.

BARNES (FANCOURT). A MANUAL OF MIDWIFERY FOR MIDWIVES. In one 12mo. vol. of 197 pp., with 50 illus. Cloth, $1 25.

BARNES (ROBERT). A PRACTICAL TREATISE ON THE DISEASES OF WOMEN. Third American from 3d English edition. In one 8vo. vol. of about 800 pages, with about 200 illus. *Preparing.*

BARNES (ROBERT and FANCOURT). A SYSTEM OF OBSTETRIC MEDICINE AND SURGERY, THEORETICAL AND CLINICAL. The Section on Embryology by Prof. Milnes Marshall. In two large octavo volumes, profusely illustrated. *Preparing.*

BARTHOLOW (ROBERTS). A PRACTICAL TREATISE ON ELECTRICITY AS APPLIED TO THE PRACTICE OF MEDICINE. Second edition. In one very handsome octavo volume of 292 pages, with 109 illustrations. Cloth, $2 50.

BASHAM (W. R.) RENAL DISEASES; A CLINICAL GUIDE TO THEIR DIAGNOSIS AND TREATMENT. In one 12mo. volume of 304 pages, with illustrations. Cloth, $2 00

BELL (T. JEFFREY). COMPARATIVE PHYSIOLOGY AND ANATOMY. See *Students' Series of Manuals*, p. 11.

BELLAMY (EDWARD). A MANUAL OF SURGICAL ANATOMY. In one royal 12mo. volume of 300 pages, with 50 illustrations. Cloth, $2 25.

——OPERATIVE SURGERY. See *Students' Series of Manuals*, p. 11.

BLANDFORD (G. F.) INSANITY AND ITS TREATMENT. Lectures on the Treatment, Medical and Legal, of Insane Patients. In one very handsome octavo volume.

BLOXAM (C. L). CHEMISTRY, INORGANIC AND ORGANIC. With Experiments. New American from the fifth London edition. In one handsome octavo volume of about 700 pages, with 295 illustrations. Cloth, $3 75; leather, $4 75. *Just ready.*

BRISTOWE (JOHN SYER). A TREATISE OF THE PRACTICE OF MEDICINE. Second American edition, revised by the Author. Edited with additions by James H. Hutchinson, M.D. In one handsome 8vo. volume of 1085 pages. Cloth, $5 00; leather, $6 00; very handsome half Russia, raised bands, $6 50.

BROWNE (EDGAR A.) HOW TO USE THE OPHTHALMOSCOPE. Elementary instruction in Ophthalmoscopy for the Use of Students. In one small 12mo. volume of 116 pages, with 35 illust. Cloth, $1.

BROWNE (LENNOX). THE THROAT AND ITS DISEASES. New edition. In one handsome imperial 8vo. volume, with 12 colored plates, 120 typical illust. in color and 50 woodcuts. *Preparing.*

BRUCE (J. MITCHELL). MATERIA MEDICA AND THERAPEUTICS. See *Students' Series of Manuals*, p. 11.

BRUNTON (T. LAUDER). A MANUAL OF MATERIA MEDICA AND THERAPEUTICS; including the Pharmacy, the Physiological Action and the Therapeutical Uses of Drugs. In one handsome octavo volume. *Preparing.*

BRYANT (THOMAS). THE PRACTICE OF SURGERY. Third American from the third English edition. Edited, with additions, by J. B. Roberts, M.D. In one imperial octavo volume of 1009 pages, with 735 illustrations. Cloth, $6 50; leather, $7 50; very handsome half Russia, raised bands, $8.

BUMSTEAD (F. J.) and TAYLOR (R. W.) THE PATHOLOGY AND TREATMENT OF VENEREAL DISEASES. Fifth edition, revised and enlarged, by R. W. Taylor, M.D. In one handsome 8vo. volume of 900 pages, with about 150 illustrations, and a chromolithographic plate containing 13 figures. *In a few days.*

—— AND CULLERIER'S ATLAS OF VENEREAL. See "CULLERIER.

BURNETT (CHARLES H.) THE EAR: ITS ANATOMY, PHYSIOLOGY AND DISEASES. A Practical Treatise for the Use of Students and Practitioners. In one handsome octavo volume of 619 pages, with 87 illustrations. Cloth, $4 50; leather, $5 50; very handsome half Russia, raised bands, $6.

CARPENTER (WM. B.) PRINCIPLES OF HUMAN PHYSIOLOGY. A new American, from the eighth English edition. In one large 8vo. volume of 1083 pages, with 373 illustrations. Cloth, $5 50; leather, raised bands, $6 50; half Russia, raised bands, $7.

—— PRIZE ESSAY ON THE USE OF ALCOHOLIC LIQUORS IN HEALTH AND DISEASE. New Edition, with a Preface by D. F. Condie, M.D. One 12mo. volume of 178 pages. Cloth, 60 cents.

CARTER (R. BRUDENELL). A PRACTICAL TREATISE ON DISEASES OF THE EYE. With additions and test-types, by John Green, M.D. In one 8vo. vol. of 500 pages, with 124 illustrations.

CENTURY OF AMERICAN MEDICINE.—A HISTORY OF MEDICINE IN AMERICA, 1776–1876. In one 12mo. vol. of 366 pages. Cloth, $2 25.

CHADWICK (JAMES R.) A MANUAL OF THE DISEASES PECULIAR TO WOMEN. In one 12mo. vol., with illust. *Preparing.*

CHAMBERS (T. K.) A MANUAL OF DIET IN HEALTH AND DISEASE. In one handsome 8vo. vol. of 302 pages. Cloth, $2 75.

CHURCHILL (FLEETWOOD). ESSAYS ON THE PUERPERAL FEVER. In one octavo volume of 464 pages. Cloth, $2 50.

CLARKE (W. B.) AND LOCKWOOD (C. B.) THE DISSECTOR'S MANUAL. See *Students' Series of Manuals*, p. 11.

CLASSEN'S QUANTITATIVE ANALYSIS. Translated by Edgar F. Smith, Ph.D. In one 12mo. vol. of 324 pp., with 36 illus. Cloth, $2 00.

CLELAND (JOHN). A DIRECTORY FOR THE DISSECTION OF THE HUMAN BODY. In one 12mo. vol. of 178 pp. Cloth, $1 25.

CLOUSTON (THOMAS S.) CLINICAL LECTURES ON MENTAL DISEASES. In one handsome octavo volume of 600 pages, illustrated with woodcuts and lithographic plates. *In press.*

CLOWES (FRANK). AN ELEMENTARY TREATISE ON PRACTICAL CHEMISTRY AND QUALITATIVE INORGANIC ANALYSIS. From the Third Eng. Ed. In one 12mo. vol. Cloth, $2 50.

COATS (JOSEPH). A TREATISE ON PATHOLOGY. In one octavo volume of 829 pages, with 339 fine engravings. Cloth, $5 50; leather, $6 50. *Just ready.*

COLEMAN (ALFRED). A MANUAL OF DENTAL SURGERY AND PATHOLOGY. With Notes and Additions to adapt it to American Practice. By Thos. C. Stellwagen, M.A., M.D., D.D.S. In one handsome 8vo. vol. of 412 pp., with 331 illus. Cloth, $3 25.

CONDIE (D. FRANCIS). A PRACTICAL TREATISE ON THE DISEASES OF CHILDREN. Sixth edition, revised and enlarged. In one large 8vo. vol. of 719 pages. Cloth, $5 25; leather, $6 25.

COOPER (B. B.) LECTURES ON THE PRINCIPLES AND PRACTICE OF SURGERY. In one large 8vo. vol. of 767 pages. Cloth, $2 00.

CORNIL (V.) SYPHILIS: ITS MORBID ANATOMY, DIAGNOSIS AND TREATMENT. Translated, with notes and additions, by J. Henry C. Simes, M.D., and J. William White, M.D. In one 8vo. volume of 461 pages, with 84 illustrations. Cloth, $3 75.

CORNIL (V.), AND RANVIER (L.) MANUAL OF PATHOLOGICAL HISTOLOGY. Translated, with Notes and Additions, by E. O. Shakespeare, M.D., and J. Henry C. Simes, M.D. In one octavo volume of 800 pages, with 360 illustrations. Cloth, $5 50; leather, $6 50; very handsome half Russia, raised bands, $7.

CULLERIER (A.) AN ATLAS OF VENEREAL DISEASES. Translated and edited by FREEMAN J. BUMSTEAD, M.D., LL.D. A large imperial quarto volume, with 26 plates containing about 150 figures, beautifully colored, many of them life-size. In one vol., strongly bound in cloth, $17.

DALTON (J. C.) A TREATISE ON HUMAN PHYSIOLOGY. Seventh edition, thoroughly revised, and greatly improved. In one very handsome 8vo. vol. of 722 pages, with 252 illustrations. Cloth, $5; leather, $6; very handsome half Russia, $6 50.

DALTON (J. C.) THE TOPOGRAPHICAL ANATOMY OF THE BRAIN. In one quarto volume of 200 pages, with 94 photographic plates and many woodcuts. *Preparing.*

DANA (JAMES D.) THE STRUCTURE AND CLASSIFICATION OF ZOOPHYTES. With illust. on wood. In one imp. 4to. vol. Clo., $4.

DAVIS (F. H.) LECTURES ON CLINICAL MEDICINE. Second ed., revised and enlarged. In one 12mo. vol. of 287 pp. Cloth, $1 75.

DE LA BECHE'S GEOLOGICAL OBSERVER. In one large 8vo. vol. of 700 pages, with 300 illustrations. Cloth, $4.

DRUITT (ROBERT). THE PRINCIPLES AND PRACTICE OF MODERN SURGERY. A revised American, from the eighth London edition. In one octavo volume of 687 pages, with 432 wood engravings. Cloth, $4; leather, $5.

DUJARDIN-BEAUMETZ. DICTIONARY OF THERAPEUTICS, MATERIA MEDICA, PHARMACY, TOXICOLOGY AND MINERAL WATERS. Translated with notes and additions. *Preparing.*

DUNCAN (J. MATTHEWS). CLINICAL LECTURES ON THE DISEASES OF WOMEN. Delivered in St. Bartholomew's Hospital. In one octavo volume of 175 pages. Cloth, $1 50.

DUNGLISON (ROBLEY). MEDICAL LEXICON; A Dictionary of Medical Science. Containing a concise explanation of the various subjects and terms of Anatomy, Physiology, Pathology, Hygiene, Therapeutics, Pharmacology, Pharmacy, Surgery, Obstetrics, Medical Jurisprudence and Dentistry; notices of Climate and of Mineral Waters; Formulæ for Officinal, Empirical and Dietetic Preparations; with the accentuation and Etymology of the Terms, and the French and other Synonymes. New edition. In one very large royal 8vo. vol. Cloth, $6 50; leather, $7 50; half Russia, raised bands, $8.

EDIS (ARTHUR W.). DISEASES OF WOMEN. A Manual for Students and Practitioners. In one handsome 8vo. vol., of 576 pp., with 148 illustrations. Cloth, $3; leather, $4.

ELLIS (GEORGE VINER). DEMONSTRATIONS IN ANATOMY. Being a Guide to the Knowledge of the Human Body by Dissection. From the eighth and revised English edition. In one very handsome octavo volume of 716 pages, illustrated by 249 engravings on wood. Cloth, $4 25; leather, $5 25.

EMMET (THOMAS ADDIS). THE PRINCIPLES AND PRACTICE OF GYNÆCOLOGY, for the use of Students and Practitioners. Second edition, enlarged and revised. In one large 8vo. vol. of 879 pp., with 133 original illustrations. Cloth, $5; leather, $6; very handsome half Russia, raised bands, $6 50.

ERICHSEN (JOHN E.) THE SCIENCE AND ART OF SURGERY. A new American, from the eighth enlarged and revised London edition. In two large octavo volumes of about 2000 pages, with about 900 illustrations. *Preparing.*

ESMARCH (FRIEDRICH). EARLY AID IN INJURIES AND ACCIDENTS. In one small 12mo. volume of 109 pages, with 24 illustrations. Cloth, 75 cents. (*Just ready.*)

FARQUHARSON (ROBERT). A GUIDE TO THERAPEUTICS. Third American edition, specially revised by the Author. Edited, with additions, embracing the U. S. Pharmacopœia, by Frank Woodbury, M.D. In one royal 12mo. volume of 524 pages. Cloth, $2 25. (*Just ready.*)

FENWICK (SAMUEL). THE STUDENTS' GUIDE TO MEDICAL DIAGNOSIS. From the third revised and enlarged London edition. In one royal 12mo. volume of 328 pages. Cloth, $2 25.

FINLAYSON (JAMES). CLINICAL DIAGNOSIS. A Handbook for Students and Practitioners of Medicine. In one handsome 8vo. vol. of 546 pages, with 85 woodcuts. Cloth, $2 63.

FLINT (AUSTIN). A TREATISE ON THE PRINCIPLES AND PRACTICE OF MEDICINE. Fifth edition, thoroughly revised and largely rewritten. In one large 8vo. vol. of 1150 pages Cloth, $5 50; leather, $6 50; very handsome half Russia, $7.

—— A MANUAL OF AUSCULTATION AND PERCUSSION; of the Physical Diagnosis of Diseases of the Lungs and Heart, and of Thoracic Aneurism. Third edition, revised and enlarged. In one handsome royal 12mo. volume of 240 pages. Cloth, $1 63. *Just ready.*

—— A PRACTICAL TREATISE ON THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE HEART. Second edition, enlarged. In one octavo volume of 550 pages. Cloth, $4 00.

—— A PRACTICAL TREATISE ON THE PHYSICAL EXPLORATION OF THE CHEST, AND THE DIAGNOSIS OF DISEASES AFFECTING THE RESPIRATORY ORGANS. Second and revised edition. In one octavo volume of 591 pages. Cloth, $4 50.

—— CLINICAL MEDICINE. A SYSTEMATIC TREATISE ON THE DIAGNOSIS AND TREATMENT OF DISEASE. Designed for Students and Practitioners of Medicine. In one handsome octavo volume of 799 pages. Cloth, $4 50; leather, $5 50; very handsome half Russia, raised bands, $6 00.

—— MEDICAL ESSAYS. In one 12mo. vol., pp. 210. Cloth, $1 38.

—— ON PHTHISIS: ITS MORBID ANATOMY, ETIOLOGY, ETC., a series of Clinical Lectures. In one 8vo. vol., pp. 442. Cloth, $3 50.

—— THE PHYSICAL EXPLORATION OF THE LUNGS, BY MEANS OF AUSCULTATION AND PERCUSSION. In one small 12mo. volume of 83 pages. Cloth, $1. *Just ready.*

FOSTER (MICHAEL). A TEXT-BOOK OF PHYSIOLOGY. Second Am. from the last Lond. edition, with extensive notes and additions by E. T. Reichert, M.D. In one large 12mo. vol. of 999 pages, with 259 illustrations. Cloth, $3 25; leather, $3 75.

—— A TEXT-BOOK OF PHYSIOLOGY. English Student's edition. In one handsome 12mo. vol. of 804 pp., with 72 illus. Cloth, $3 00.

FOTHERGILL'S PRACTITIONER'S HANDBOOK OF TREATMENT. Second edition, revised and enlarged. In one handsome octavo vol. of about 650 pp. Cloth, $4 00; very handsome half Rus., $5 50.

FOWNES (GEORGE). A MANUAL OF ELEMENTARY CHEMISTRY. A new American, from the twelfth English edition. In one royal 12mo. volume of 1031 pages, with 177 illustrations, and one colored plate. Cloth, $2 75; leather, $3 25.

FOX (TILBURY). EPITOME OF SKIN DISEASES, with Formulæ. For Students and Practitioners. Third Am. edition, revised by the Author and T. C. Fox. In one small 12mo. vol. *Shortly.*

FULLER (HENRY). ON DISEASES OF THE LUNGS AND AIR PASSAGES. Their Pathology, Physical Diagnosis, Symptoms and Treatment. From 2d Eng. ed In 1 8vo. vol., pp. 475. Cloth, $3 50.

GALLOWAY (ROBERT). A MANUAL OF QUALITATIVE ANALYSIS. From the sixth London edition. *Preparing.*

GIBNEY (V. P). ORTHOPÆDIC SURGERY. For the use of Practitioners and Students. In one handsome octavo volume profusely illustrated. *Preparing.*

GIBSON'S INSTITUTES AND PRACTICE OF SURGERY. In two octavo volumes of about 1000 pages. Leather, $6 50.

GLUGE (GOTTLIEB). ATLAS OF PATHOLOGICAL HISTOLOGY. Translated by Joseph Leidy, M.D., Professor of Anatomy in the University of Pennsylvania, &c. In one imperial quarto volume, with 320 copperplate figures, plain and colored. Cloth, $4.

GRAY (HENRY). ANATOMY, DESCRIPTIVE AND SURGICAL. Edited by T. Pickering Pick, F.R.C.S. A new American, from the tenth and enlarged London edition. To which is added Holden's "Landmarks, Medical and Surgical," with additions by W. W. Keen, M.D. In one imperial octavo volume of 1023 pages, with 564 large and elaborate engravings on wood. Cloth, $6; leather, $7; very handsome half Russia, raised bands, $7 50. *Just ready.*

GREEN (T. HENRY). AN INTRODUCTION TO PATHOLOGY AND MORBID ANATOMY. Fifth American, from the sixth London edition. In one handsome octavo volume of about 400 pages, with about 150 illustrations. *Preparing.*

GREENE (WILLIAM H.) A MANUAL OF MEDICAL CHEMISTRY. For the Use of Students. Based upon Bowman's Medical Chemistry. In one royal 12mo. volume of 310 pages, with 74 illustrations. Cloth, $1 75.

GRIFFITH (ROBERT E.) A UNIVERSAL FORMULARY, CONTAINING THE METHODS OF PREPARING AND ADMINISTERING OFFICINAL AND OTHER MEDICINES. Third and enlarged edition. Edited by John M. Maisch, Phar.D. In one large 8vo. vol. of 775 pages, double columns. Cloth, $4 50; leather, $5 50.

GROSS (SAMUEL D.) A PRACTICAL TREATISE ON THE DISEASES, Injuries and Malformations of the Urinary Bladder, the Prostate Gland and the Urethra. Third edition, thoroughly revised and much condensed, by Samuel W. Gross, M.D. In one octavo volume of 574 pages, with 170 illus. Cloth, $4 50.

—— A SYSTEM OF SURGERY, PATHOLOGICAL, DIAGNOSTIC, THERAPEUTIC AND OPERATIVE. Sixth edition, thoroughly revised. In two imperial octavo volumes containing 2382 pages, with 1623 illustrations. Strongly bound in leather, raised bands, $15; very handsome half Russia, raised bands, $16.

—— A PRACTICAL TREATISE ON FOREIGN BODIES IN THE AIR PASSAGES. In one 8vo. vol. of 468 pages. Cloth, $2 75.

GROSS (SAMUEL W.) A PRACTICAL TREATISE ON IMPOTENCE, STERILITY, AND ALLIED DISORDERS OF THE MALE SEXUAL ORGANS. Second edition. In one handsome octavo vol. of 168 pp., with 16 illust. Cloth, $1 50. *Just ready.*

GUSSEROW (A.) A TREATISE ON UTERINE TUMORS. Revised by the Author, and translated by Edmund C. Wendt, M.D., with additions by the translator and Nathan Bozeman, M.D. In one 8vo. volume of about 400 pages, with many illustrations. *Preparing.*

GYNECOLOGICAL TRANSACTIONS. Vol. VI. (1881.) In one very handsome octavo volume of 549 pages, with illustrations. Cloth, $5. Vols. I., III., IV., V., each $5.

HABERSHON (S. O.) ON THE DISEASES OF THE ABDOMEN, AND OTHER PARTS OF THE ALIMENTARY CANAL. Second American, from the third English edition. In one handsome 8vo. volume of 554 pages, with illus. Cloth, $3.50.

HAMILTON (ALLAN McLANE). NERVOUS DISEASES, THEIR DESCRIPTION AND TREATMENT. Second and revised edition. In one octavo volume of 598 pages, with 72 illustrations. Cloth, $4.

HAMILTON (FRANK H.) A PRACTICAL TREATISE ON FRACTURES AND DISLOCATIONS. Sixth edition, thoroughly revised. In one handsome 8vo. vol. of 909 pages, with 352 illus. Cloth, $5 50; leather, $6 50; very handsome half Russia, $7.

HARTSHORNE (HENRY). ESSENTIALS OF THE PRINCIPLES AND PRACTICE OF MEDICINE. Fifth edition. In one 12mo. vol. 669 pp. with 144 illustrations. Cloth, $2 75; half bound, $3.

—— A HANDBOOK OF ANATOMY AND PHYSIOLOGY. In one royal 12mo. volume of 310 pages, with 220 illustrations. Cloth, $1 75.

—— A CONSPECTUS OF THE MEDICAL SCIENCES. Comprising Manuals of Anatomy, Physiology, Chemistry, Materia Medica, Practice of Medicine, Surgery and Obstetrics. Second edition. In one royal 12mo. volume of 1028 pages, with 477 illustrations. Cloth, $4 25; leather, $5 00.

HEATH (CHRISTOPHER). PRACTICAL ANATOMY; A MANUAL OF DISSECTIONS. With additions, by W. W. Keen, M. D.

HERMANN (L.) EXPERIMENTAL PHARMACOLOGY. A Handbook of the Methods for Determining the Physiological Actions of Drugs. Translated by Robert Meade Smith, M.D. In one 12mo. vol. of 199 pages, with 32 illustrations. Cloth, $1 50. *Just ready.*

HILL (BERKELEY). SYPHILIS AND LOCAL CONTAGIOUS DISORDERS In one 8vo. volume of 479 pages. Cloth, $3 25.

HILLIER (THOMAS). A HANDBOOK OF SKIN DISEASES. 2d ed. In one royal 12mo. volume of 353 pages, with two plates. Cloth, $2 25.

HOBLYN (RICHARD D.) A DICTIONARY OF THE TERMS USED IN MEDICINE AND THE COLLATERAL SCIENCES. In one 12mo. vol. of 520 double-columned pp. Cloth, $1 50; leather, $2.

HODGE (HUGH L.) ON DISEASES PECULIAR TO WOMEN, INCLUDING DISPLACEMENTS OF THE UTERUS. Second and revised edition. In one 8vo. volume of 519 pages. Cloth, $4 50.

—— THE PRINCIPLES AND PRACTICE OF OBSTETRICS. In one large 4to. vol. of 542 double-columned pages, illustrated with large lithographic plates containing 159 figures from original photographs, and 110 woodcuts. Strongly bound in cloth, $14.

HOFFMANN (FREDERICK) AND POWER (FREDERICK B.) A MANUAL OF CHEMICAL ANALYSIS, as Applied to the Examination of Medicinal Chemicals and their Preparations. Third edition, entirely rewritten and much enlarged. In one handsome octavo volume of 621 pages, with 179 illustrations. Cloth, $4 25. *Just ready.*

HOLDEN (LUTHER). LANDMARKS, MEDICAL AND SURGICAL. From the third English edition. With additions, by W. W. Keen, M.D. In one royal 12mo. vol. of 148 pp. Cloth, $1.

HOLLAND (SIR HENRY). MEDICAL NOTES AND REFLECTIONS. From 3d English ed. In one 8vo. vol. of 493 pp. Cloth, $3 50.

HOLMES (TIMOTHY.) A SYSTEM OF SURGERY. With notes and additions by various American authors. Edited by John H. Packard, M.D. In three very handsome 8vo. vols. containing 3137 double-columned pages, with 979 woodcuts and 13 lithographic plates. Cloth, $18; leather, $21; very handsome half Russia, raised bands, $22 50. *For sale by subscription only.*

HOLMES (TIMOTHY). SURGERY, ITS PRINCIPLES AND PRACTICE. In one handsome octavo volume of 968 pages, with 411 illustrations. Cloth, $6; leather, raised bands, $7; very handsome half Russia, raised bands, $7 50.

HORNER (WILLIAM E.) SPECIAL ANATOMY AND HISTOLOGY. Eighth edition, revised and modified. In two large 8vo. vols. of 1007 pages, containing 320 woodcuts. Cloth, $6.

HUDSON (A.) LECTURES ON THE STUDY OF FEVER. In one octavo volume of 308 pages. Cloth, $2 50.

HYDE (JAMES NEVINS). A PRACTICAL TREATISE ON DISEASES OF THE SKIN. In one handsome octavo volume of 570 pages, with 66 illust. Cloth, $4 25; leather, $5 25. *Just ready.*

JONES (C. HANDFIELD). CLINICAL OBSERVATIONS ON FUNCTIONAL NERVOUS DISORDERS. Second American edition. In one octavo volume of 340 pages. Cloth, $3 25.

KEATING (JOHN M.) THE CARE OF INFANTS. In one small 12mo. volume of 118 pages. Cloth, $1.

KING (A. F. A.). A MANUAL OF OBSTETRICS. In one very handsome 12mo. vol. of 321 pages, with 58 illustrations. Cloth. $2·

KLEIN (E.) ELEMENTS OF HISTOLOGY. In one pocket-size 12mo. volume of 360 pages, with 180 engravings. Cloth, $1 50. *Just ready.* See *Students' Series of Manuals*, page 11.

LA ROCHE (R.) YELLOW FEVER. In two 8vo. vols. of 1468 pages. Cloth, $7.

—— PNEUMONIA. In one 8vo. vol. of 490 pages. Cloth, $3.

LAURENCE (J. Z.) AND MOON (ROBERT C.) A HANDY-BOOK OF OPHTHALMIC SURGERY. Second edition, revised by Mr. Laurence. In one 8vo. vol. pp. 227, with 66 illus. Cloth, $2 75.

LAWSON (GEORGE). INJURIES OF THE EYE, ORBIT AND EYELIDS. From the last English edition. In one handsome octavo volume of 404 pages, with 92 illustrations. Cloth, $3 50.

LEA (HENRY C.) SUPERSTITION AND FORCE; ESSAYS ON THE WAGER OF LAW, THE WAGER OF BATTLE, THE ORDEAL AND TORTURE. Third edition, thoroughly revised and greatly enlarged. In one handsome royal 12mo. vol. pp. 552. Cloth, $2 50.

—— STUDIES IN CHURCH HISTORY. The Rise of the Temporal Power—Benefit of Clergy—Excommunication. New edition. In one handsome 12mo. vol. of 605 pp. Cloth, $2 50. *Just ready.*

—— AN HISTORICAL SKETCH OF SACERDOTAL CELIBACY IN THE CHRISTIAN CHURCH. In one handsome octavo volume of 602 pages. Cloth, $2 50.

LEE (HENRY) ON SYPHILIS. In one 8vo volume of 246 pages. Cloth, $2 25.

LEHMANN (C. G.) A MANUAL OF CHEMICAL PHYSIOLOGY. In one 8vo. vol. of 327 pages, with 41 woodcuts. Cloth, $2 25.

LEISHMAN (WILLIAM). A SYSTEM OF MIDWIFERY. Including the Diseases of Pregnancy and the Puerperal State. Third American, from the third English edition. With additions, by J. S. Parry, M.D. In one very handsome octavo volume of 740 pages, with 205 illustrations. Cloth, $4 50; leather, $5 50; very handsome half Russia, $6.

LUDLOW (J. L.) A MANUAL OF EXAMINATIONS UPON ANATOMY, PHYSIOLOGY, SURGERY, PRACTICE OF MEDICINE, OBSTETRICS, MATERIA MEDICA, CHEMISTRY, PHARMACY AND THERAPEUTICS. To which is added a Medical Formulary. Third edition. In one royal 12mo. volume of 816 pages, with 370 woodcuts. Cloth, $3 25; leather, $3 75.

LYONS (ROBERT D.) A TREATISE ON FEVER. In one octavo volume of 362 pages. Cloth, $2 25.

MAISCH (JOHN M.) A MANUAL OF ORGANIC MATERIA MEDICA. In one handsome 12mo. volume of 451 pages, with 194 beautiful illustrations. Cloth, $2 75.

MEIGS (CHAS. D.) ON THE NATURE, SIGNS AND TREATMENT OF CHILDBED FEVER. In one 8vo. vol. of 346 pages. Cloth, $2.

MILLER (JAMES). PRINCIPLES OF SURGERY. Fourth American, from the third Edinburgh edition. In one large octavo volume of 688 pages, with 240 illustrations. Cloth, $3 75.

MILLER (JAMES). THE PRACTICE OF SURGERY. Fourth American, from the last Edinburgh edition. In one large octavo volume of 682 pages, with 364 illustrations. Cloth, $3 75.

MITCHELL (S. WEIR). LECTURES ON NERVOUS DISEASES, ESPECIALLY IN WOMEN. Second edition. *Preparing.*

MONTGOMERY (W. F.) AN EXPOSITION OF THE SIGNS AND SYMPTOMS OF PREGNANCY. From the second English edition. In one handsome 8vo. vol. of 568 pages, with illus. Cloth, $3 75.

MORRIS (MALCOLM). SKIN DISEASES: Including their Definitions, Symptoms, Diagnosis, Prognosis, Morbid Anatomy and Treatment. A Manual for Students and Practitioners. In one 12mo. vol. of 316 pages, with illustrations. Cloth, $1 75.

MÜLLER (J.) PRINCIPLES OF PHYSICS AND METEOROLOGY. In one large 8vo. vol. of 623 pages, with 538 cuts. Cloth, $4 50.

NEILL (JOHN) AND SMITH (FRANCIS G.) A COMPENDIUM OF THE VARIOUS BRANCHES OF MEDICAL SCIENCE. In one handsome 12mo. volume of 974 pages, with 374 woodcuts. Cloth, $4; leather, raised bands, $4 75.

NETTLESHIP'S MANUAL OF OPHTHALMIC MEDICINE. Second edition. In one royal 12mo. volume of 419 pages, with 138 illustrations. Cloth, $2 00. *Just ready.*

PARRISH (EDWARD). A TREATISE ON PHARMACY. With many Formulæ and Prescriptions. Fifth edition, enlarged and thoroughly revised by Thomas S. Wiegand, Ph. G. In one handsome octavo volume of about 1000 pages, with about 300 illustrations. *Shortly.*

PARVIN (THEOPHILUS). A TREATISE ON MIDWIFERY. In one handsome 8vo. vol. of about 550 pp., with many illus. *In press.*

PAVY (F. W.) A TREATISE ON THE FUNCTION OF DIGESTION, ITS DISORDERS AND THEIR TREATMENT. From the second London edition. In one octavo volume of 238 pages. Cloth, $2.

PEPPER (A. J) SURGICAL PATHOLOGY. See *Students' Series of Manuals*, page 11.

PIRRIE (WILLIAM). THE PRINCIPLES AND PRACTICE OF SURGERY. In one handsome octavo volume of 780 pages, with 316 illustrations. Cloth, $3 75.

PLAYFAIR (W. S.) A TREATISE ON THE SCIENCE AND PRACTICE OF MIDWIFERY. Third American edition, specially revised by the Author. Edited, with additions, by R. P. Harris, M.D. In one octavo volume of 659 pages, with 183 woodcuts and two plates. Cloth, $4; leather, $5; half Russia, raised bands, $5 50.

—— THE SYSTEMATIC TREATMENT OF NERVE PROSTRATION AND HYSTERIA. In one handsome 12mo. vol. of 97 pages. Cloth, $1. *Just ready.*

POLITZER (ADAM). A TEXT-BOOK OF THE EAR AND ITS DISEASES. Translated at the Author's request by James Patterson Cassells, M.D., F.F.P.S. In one handsome octavo volume of 800 pages, with 257 original illustrations. Cloth, $5 50. *Just ready.*

POWER (HENRY). HUMAN PHYSIOLOGY. See *Students' Series of Manuals*, page 11.

RALFE (CHARLES H.) CLINICAL CHEMISTRY. See *Students' Series of Manuals*, page 11.

RAMSBOTHAM (FRANCIS H.) THE PRINCIPLES AND PRACTICE OF OBSTETRIC MEDICINE AND SURGERY. In one imperial octavo volume of 640 pages, with 64 plates, besides numerous woodcuts in the text. Strongly bound in leather, $7.

REMSEN (IRA). THE PRINCIPLES OF CHEMISTRY. Second edition. In one handsome 12mo. volume of about 250 pp. *Shortly.*

REYNOLDS (J. RUSSELL). A SYSTEM OF MEDICINE, with Notes and Additions, by HENRY HARTSHORNE, M.D. In three large 8vo. vols., containing 3056 closely printed double-columned pages, with 317 illus. Per vol., cloth, $5; leather, $6; very handsome half Russia, $6 50. *For sale by subscription only.*

RICHARDSON (BENJAMIN W.) PREVENTIVE MEDICINE. In one octavo volume of about 500 pages. *Shortly.*

ROBERTS (JOHN B.) THE PRINCIPLES AND PRACTICE OF SURGERY. In one octavo volume of about 500 pages, fully illustrated. *Preparing.*

ROBERTS (WILLIAM). A PRACTICAL TREATISE ON URINARY AND RENAL DISEASES. Fourth American, from the fourth London edition. With numerous illustrations and a colored plate. In one very handsome 8vo. vol. of over 600 pages. *Preparing.*

ROBERTSON (J. McGREGOR). PHYSICAL PHYSIOLOGY. See *Students' Series of Manuals*, p. 11.

SARGENT (F. W.) ON BANDAGING AND OTHER OPERATIONS OF MINOR SURGERY. New edition, with an additional chapter on Military Surgery. In one handsome royal 12mo. volume of 383 pages, with 187 woodcuts. Cloth, $1 75.

SCHÄFER (EDWARD ALBERT). A COURSE OF PRACTICAL HISTOLOGY: A Manual of the Microscope for Medical Students. In one handsome octavo volume, with many illustrations.

SCHMITZ AND ZUMPT'S CLASSICAL SERIES. In royal 18mo.
ADVANCED LATIN EXERCISES, WITH SELECTIONS FOR READING. Revised. Cloth, price 60 cents; half bound, 70 cents.

C. C. SALLUSTII DE BELLO CATILINARIO ET JUGURTHINO. With notes, map, &c. Price in cloth, 60 cents; half bound, 70 cents.

CORNELII NEPOTIS LIBER DE EXCELLENTIBUS DUCIBUS EXTERARUM GENTIUM, CUM VITIS CATONIS ET ATTICI. With notes, &c. Price in cloth, 60 cents; half bound, 70 cts.

P. VIRGILII MARONIS CARMINA OMNIA. Price in cloth, 85 cents; half bound, $1.

Q. CURTII RUFI DE GESTIS ALEXANDRI MAGNI LIBRI VIII. With notes, map, &c. Price in cloth, 80 cents; half bound, 90 cents.

SCHOEDLER (FREDERICK) AND MEDLOCK (HENRY). WONDERS OF NATURE. An elementary introduction to the Sciences of Physics, Astronomy, Chemistry, Mineralogy, Geology, Botany, Zoology and Physiology. Translated from the German by H. Medlock. In one 8vo. vol., with 679 illustrations. Cloth, $3.

SEILER (CARL). A HANDBOOK OF DIAGNOSIS AND TREATMENT OF DISEASES OF THE THROAT AND NASAL CAVITIES. Second edition. In one very handsome 12mo. volume of 94 pages, with 77 illustrations. Cloth, $1 75. *Just ready.*

SHARPEY (WILLIAM) AND QUAIN (JONES AND RICHARD). HUMAN ANATOMY. With notes and additions by Jos. Leidy, M.D., Prof. of Anatomy in the University of Pennsylvania. In two large 8vo. vols. of about 1300 pages, with 511 illustrations.

SKEY (FREDERIC C.) OPERATIVE SURGERY. In one 8vo. vol. of over 650 pages, with 81 woodcuts. Cloth, $3 25.

SLADE (D. D.) DIPHTHERIA; ITS NATURE AND TREATMENT. Second edition. In one royal 12mo. vol. pp. 158. Cloth, $1 25.

SMITH (EDWARD). CONSUMPTION; ITS EARLY AND REMEDIABLE STAGES. In one 8vo. vol. of 253 pp. Cloth, $2 25.

SMITH (EUSTACE). ON THE WASTING DISEASES OF CHILDREN. Second American edition, enlarged. In one 8vo. vol. Cloth, $2 50.

SMITH (HENRY H.) AND HORNER (WILLIAM E.) ANATOMICAL ATLAS. Illustrative of the structure of the Human Body. In one large imperial 8vo. vol., with about 650 beautiful figures. Clo., $4 50.

SMITH (J. LEWIS). A TREATISE ON THE DISEASES OF INFANCY AND CHILDHOOD. Fifth edition, revised and enlarged. In one large 8vo. volume of 836 pages, with illustrations. Cloth, $4 50; leather, $5 50; very handsome half Russia, raised bands, $6.

STILLÉ (ALFRED). THERAPEUTICS AND MATERIA MEDICA. Fourth revised edition. In two handsome octavo volumes of 1936 pages. Cloth, $10; leather, $12; very handsome half Russia, $13.

STILLÉ (ALFRED) AND MAISCH (JOHN M.) THE NATIONAL DISPENSATORY: Containing the Natural History, Chemistry, Pharmacy, Actions, and Uses of Medicines. Including those recognized in the Pharmacopœias of the United States, Great Britain, and Germany, with numerous references to the French Codex. Third edition, thoroughly revised and greatly enlarged. In one magnificent imperial octavo volume of about 1600 pages, with several hundred accurate engravings on wood. *In press.*

STIMSON (LEWIS A.) A PRACTICAL TREATISE ON FRACTURES. In one handsome octavo volume of 584 pages, with 360 beautiful illustrations. Cloth, $4 75; leather, $5 75. *Just ready.*

—— A MANUAL OF OPERATIVE SURGERY. In one royal 12mo. volume of 477 pages, with 332 illustrations. Cloth, $2 50.

STOKES (W.) LECTURES ON FEVER. In one 8vo. volume. Cloth, $2.

STUDENTS' SERIES OF MANUALS. A series of fifteen Manuals by eminent teachers or examiners. The volumes will be pocket-size 12mos. of from 300–540 pages, profusely illustrated, and bound in red limp cloth. The following volumes may now be announced: Klein's Elements of Histology, $1 50; *just ready;* Pepper's Surgical Pathology; Treves' Surgical Applied Anatomy; Power's Human Physiology, Ralph's Clinical Chemistry, and Clarke and Lockwood's Dissector's Manual, *shortly;* Robertson's Physical Physiology, Bruce's Materia Medica and Therapeutics, Bellamy's Operative Surgery, and Bell's Comparative Physiology and Anatomy, *in active preparation.*

STURGES (OCTAVIUS). AN INTRODUCTION TO THE STUDY OF CLINICAL MEDICINE. In one 12mo. vol. Cloth, $1 25.

TANNER (THOMAS HAWKES). A MANUAL OF CLINICAL MEDICINE AND PHYSICAL DIAGNOSIS. Third American from the second revised English edition. Edited by Tilbury Fox, M.D. In one handsome 12mo. volume of 362 pp., with illus. Cloth, $1 50.

—— ON THE SIGNS AND DISEASES OF PREGNANCY. From the second English edition. In one 8vo. volume of 490 pages, with four colored plates and numerous woodcuts. Cloth, $4 25.

TARNIER (S.) and CHANTREUIL (G.) A TREATISE ON THE ART OF OBSTETRICS. Translated from the French. In two large octavo volumes, richly illustrated.

TAYLOR (ALFRED S.) MEDICAL JURISPRUDENCE. Eighth American from tenth English edition, specially revised by the Author. Edited by John J. Reese, M.D. In one large octavo volume of 937 pages, with 70 illustrations. Cloth, $5; leather, $6; very handsome half Russia, raised bands, $6 50.

—— ON POISONS IN RELATION TO MEDICINE AND MEDICAL JURISPRUDENCE. Third American from the third London edition. In one octavo volume of 788 pages, with 104 illustrations. Cloth, $5 50; leather, $6 50.

—— THE PRINCIPLES AND PRACTICE OF MEDICAL JURISPRUDENCE. Third ed. In two handsome 8vo. vols. of 1416 pp., with 188 illustrations. Cloth, $10; leather, $12. *Just ready.*

THOMAS (T. GAILLARD). A PRACTICAL TREATISE ON THE DISEASES OF WOMEN. Fifth edition, thoroughly revised and rewritten. In one large and handsome octavo volume of 810 pages, with 266 illustrations. Cloth, $5; leather, $6; very handsome half Russia, $6 50.

THOMPSON (SIR HENRY). CLINICAL LECTURES ON DISEASES OF THE URINARY ORGANS. Second and revised edition. In one octavo volume of 203 pages, with illustrations. Cloth, $2 25.

—— THE PATHOLOGY AND TREATMENT OF STRICTURE OF THE URETHRA AND URINARY FISTULÆ. From the third English edition. In one octavo volume of 359 pages, with illustrations. Cloth, $3 50.

TIDY (CHARLES MEYMOTT). LEGAL MEDICINE. Volume I. In one handsome imperial octavo volume of 664 pages, with 2 colored plates. Cloth, $6; leather, $7. *Just ready.*

TODD (ROBERT BENTLEY). CLINICAL LECTURES ON CERTAIN ACUTE DISEASES. In one 8vo. vol. of 320 pp., cloth, $2 50.

TREVES (F.) SURGICAL APPLIED ANATOMY. See *Students' Series of Manuals*, page 11.

TUKE (DANIEL HACK). THE INFLUENCE OF THE MIND UPON THE BODY. New edition. In one handsome 8vo. vol. *Preparing.*

WALSHE (W. H.) PRACTICAL TREATISE ON THE DISEASES OF THE HEART AND GREAT VESSELS. 3d American from the 3d revised London edition. In one 8vo. vol. of 420 pages. Cloth, $3.

WATSON (THOMAS). LECTURES ON THE PRINCIPLES AND PRACTICE OF PHYSIC. A new American from the fifth and enlarged English edition, with additions by H. Hartshorne, M.D. In two large 8vo. vols. of 1840 pp., with 190 cuts. Clo., $9; lea., $11.

WELLS (J. SOELBERG). A TREATISE ON THE DISEASES OF THE EYE. Fourth edition, thoroughly revised by Chas. S. Bull, A.M., M.D. In one large and handsome octavo vol. of 822 pages, with 6 colored plates and 257 woodcuts, as well as selections from the test-types of Jaeger and Snellen. Cloth, $5; leather, $6; very handsome half Russia, $6 50. *Just ready.*

WEST (CHARLES). LECTURES ON THE DISEASES PECULIAR TO WOMEN. Third American from the third English edition. In one octavo volume of 543 pages. Cloth, $3 75; leather, $4 75.

—— LECTURES ON THE DISEASES OF INFANCY AND CHILDHOOD. Fifth American from the sixth revised English edition. In one large 8vo. vol. of 686 pages. Cloth, $4 50; leather, $5 50.

—— ON SOME DISORDERS OF THE NERVOUS SYSTEM IN CHILDHOOD. From the London edition. In one small 12mo. volume of 127 pages. Cloth, $1.

WILLIAMS (CHARLES J. B. and C. T.) PULMONARY CONSUMPTION: ITS NATURE, VARIETIES AND TREATMENT. In one octavo volume of 303 pages. Cloth, $2 50.

WILSON (ERASMUS). A SYSTEM OF HUMAN ANATOMY. A new and revised American from the last English edition. Illustrated with 397 engravings on wood. In one handsome octavo volume of 616 pages. Cloth, $4; leather, $5.

—— THE STUDENT'S BOOK OF CUTANEOUS MEDICINE. In one handsome royal 12mo. vol. Cloth, $3 50.

WINCKEL ON PATHOLOGY AND TREATMENT OF CHILDBED. With additions by the Author. Translated by James R. Chadwick, A.M., M.D. In one handsome 8vo. vol. of 484 pages. Cloth, $4.

WÖHLER'S OUTLINES OF ORGANIC CHEMISTRY. Translated from the 8th German edition, by Ira Remsen, M.D. In one 12mo. volume of 550 pages. Cloth, $3 00.

WOODBURY (FRANK). A HANDBOOK OF THE PRINCIPLES AND PRACTICE OF MEDICINE. In one royal 12mo. volume. *Preparing.*

LANE MEDICAL LIBRARY

To avoid fine, this book should be returned on
or before the date last stamped below.

U121 Farquharson, R.
F238 Therapeutics and
1882 materia medica. DATE DUE 2127